Railway Age

Vol. 79, No. 13 *September 26, 1925*

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The Government Accident Record

THE causes of collisions and derailments continue to be a fruitful field in which to study the varied phases of railroad discipline and train efficiency, not at all changed in its essential features by the decreasing frequency with which shocking accidents occur. The abstracts, made from government reports of investigations, which are printed on another page of this issue, contain the usual wealth of instructive data. The lessening of the death roll, cheering to everybody, inevitably lessens the mental strain on officers and all concerned; and the fact that the reports do not become generally available for months after the event also tends to dull the point of the lessons to be learned; but the lessons are there, as grim as ever! The present list includes two collisions, in each of which six passengers were killed, and a third which was fatal to four care-takers in a freight train; the three collisions together aggregated 24 persons killed and 26 injured. The block system, more or less strictly managed, had been installed on each of these three roads, but the cases present numerous lessons needing attention, nevertheless. Troubles of the old-fashioned kind, in the handling of train orders, also retain their prominent place in the record. The lessons to be derived from these reports not only come to us behind time but, as a whole—spread as they are over a boundless territory and over months of time—they are fragmentary and probably often useless, because of these limitations. A phase of this deficiency was noted in an editorial printed in these columns on September 5, in which was discussed the importance of knowing the condition of enginemen's health. Cannot this great mass of instructive current history be put into some shape more commensurate with its value? Some shape which shall bring it more effectively into contact with the minds which ought to make it really useful? Potentially, it should save countless numbers of lives and a great deal of property.

Combating Divisional Provincialism

ONE of the real benefits accruing to a railroad from a system efficiency meeting, such as that held on the Norfolk & Western on September 11 and 12 and reported in the *Railway Age* of last week, is the opportunity it provides for the formation of acquaintanceships among employees of various divisions. Railroad officers are, as a general rule, shifted about from division to division all over the railroad during the course of their careers and, after a time, have friends and acquaintances all over the property. This is not so with the majority of employees. Through the workings of seniority rules, and for other reasons, they remain fixed more or less to their own divisions and rarely get the opportunity to talk things over and benefit from the experiences of men in the same line of work elsewhere. The division boundaries for them are in many cases almost as sharply drawn as the lines between two different railroads. System efficiency meetings, system athletic meets and other congregations which ignore division lines, bringing together picked men from all over the road, tend to set up contacts between individuals which have the effect of making the best performance in various departments on the entire road, instead of the division merely, the goal for all to aim at. Provincialism—which is the failure to study and profit by the experience of others—is the deadly enemy of all progress and any kind of activity, whatever its other advantages, which serves to combat it is worth while for this reason alone.

Efficient Economy for Highway Crossing Protection

DURING the growth of street and highway traffic in the past 20 years the expense to the railroads of providing crossing protection in the form of flagmen, crossing gates, etc., has been constantly increasing. As cases come up for consideration from time to time a watchman is added at one crossing or gates installed at another, often without realization of the rapidly increasing number of men being employed on such work. With the increased wages and limited working hours of recent years this non-revenue service has led to heavy charges against operation. For example, on 66 miles of a certain double track division on a western road, the operating charges for crossing protection, including gatemen and flagmen, are approximately $216,000 a year, which equals $3,272 per mile of line a year. Crossing protection once established can rarely be abandoned, in fact demands are often made for longer hours of service and better protection at many crossings. To meet these requirements of the public and yet reduce expenditures for such protection is a problem that can perhaps be met most effectively by reducing the number of men employed which in turn can be accomplished only by replacing flagmen with automatic crossing signals and concentrating the control of two or more sets of crossing gates in one gate tower. One western road, with the co-operation of the city and state authorities, is replacing flagmen and in some cases crossing gates by automatic crossing signals. At one town in particular where several crossings are involved the control of the existing gates is to be changed so that they will be controlled from central towers, thus reducing the number of gatemen required, and at other crossings flagmen are to be replaced by automatic protection. As a result of these changes, which will cost about $12,000, better protection will be provided and a saving of $10,000 will be made annually.

The True Improvement of Freight Service

IN every review of recent business developments and every discussion of present business conditions some reference is made to the improvement in the freight service rendered by the railways as one cause of these developments and conditions. It has become generally understood that commodities loaded in a freight car will now be moved from origin to destination more quickly than ever before; that this means capital is tied up in freight in transit a much shorter time than formerly; and that business concerns generally are taking advantage of this improved service by placing orders for a shorter time ahead and by carrying smaller inventories of all kinds.

While this improvement in freight service is generally recognized, and the influence it is exercising on business methods and financial conditions is often mentioned, the exact extent of the improvement in service that has occurred and the way in which it has been brought about are not generally understood. Statistics showing the way in which freight cars are used have been more complete since the railways were returned to private operation than previously; and analysis of these statistics discloses some striking facts regarding the increase in the efficiency of freight transportation that has occurred. Such analysis not only indicates with some precision the increase that has occurred in the efficiency of freight service, but also explains why the railways within the last three years have been able repeatedly to handle a record breaking traffic while maintaining a large freight car surplus.

The measure of freight car performance which usually has been employed in the past has been the average number of miles traveled by each freight car in existence daily. This, however, has not been a good measure. The average miles traveled per car per day has been arrived at by dividing the total car mileage by the average total number of cars on line. The number on line includes cars reported as in bad order, stored and surplus. The best measure of the efficiency with which the railways use cars is the average number of miles moved daily *by those which are actually in use;* and this can be arrived at only by excluding from consideration those reported in bad order, in storage and as surplus.

The accompanying table shows for the years 1920 to 1924, and for the first six months of 1925, the average numbers of cars actually used by the railways in handling freight and in the last column the average miles they were moved daily.

Year	Average number cars on line	Average number in bad order stored and surplus	Average number actually used	Total car miles (000)	Average miles per day per car: All cars	Average miles per day per car: Used cars
1920....	2,463,899	205,034	2,258,815	22,606,984	25.1	27.3
1921....	2,429,286	913,198	1,516,088	19,847,077	22.4	35.9
1922....	2,431,810	649,677	1,782,133	20,824,291	23.5	32.0
1923....	2,459,749	305,256	2,154,493	24,992,136	27.8	31.8
1924....	2,485,667	598,382	1,887,285	24,448,926	26.9	35.4
1925*...	2,517,863	708,542	1,809,321	12,255,621	27.4	37.4

*First six months.

The statistics for the years 1920 and 1921 illustrate strikingly the effect produced by congestion or freedom from congestion upon the movement of cars actually being used. Railway terminals were constantly congested in 1920, and the average miles traveled daily by cars actually used was only 27.3. In 1921 congestion was completely eliminated by the enormous decline of traffic, and the average miles traveled daily by each car actually used increased to almost 36 miles.

In 1922 the average miles traveled by each used car was reduced to 32 miles by congestions in the latter part of the year caused by the shop employees' strike and the very large increase in traffic in the fall. As a matter of fact, conditions were abnormal in both 1921 and 1922, and the statistics for those years do not really throw much light upon the improvement in freight service that has occurred.

Although the total freight business handled in 1923 was larger than in 1920 the statistics in the table show that the average number of cars actually used in handling traffic throughout 1923 was about 100,000 less than in 1920. This reduction in the average number of cars used was made possible by an increase from 27.3 to 31.8 in the average number of miles that each car actually used was moved daily. In 1924 the total freight business handled was less than in either 1920 or 1923, and the average number of cars actually used daily declined further because the average number of miles that each car actually used was moved daily was increased to 35.4. In the first six months of 1925 the average number of cars actually used declined still further because the average miles that each car actually used moved daily was increased to almost 37½.

To get the full measure of the increase that has occurred in the efficiency with which cars are used it is necessary to compare the average miles moved daily by each car actually used in the first six months of 1925 with the average for the first six months of earlier years when a large business was handled. This average for the first six months of 1920 was 25 miles; 1923, 30.5; 1924, 35.1; 1925, 37.4. The increases over the first six months of 1920 were, in 1923, 22 per cent; in 1924, 41 per cent and in 1925, 50 per cent. It is reasonable to assume that these figures regarding the increases in the average distance moved daily by each freight car actually used in handling traffic represent the average increases in distance that freight was moved daily, and that in consequence the average ton of freight was moved 50 per cent further each day in the first six months of 1925 than in the first six months of 1920. This is equivalent to saying that within the last five years the average time consumed in moving shipments of freight from origin to destination has been reduced by one-third. It has been estimated that at present prices the value of the commodities in transit on the railroads at any given time is about $2,000,000,000. Annual interest at 6 per cent on this amount of capital is $120,000,000, and a reduction of one-third in the average length of time it is tied up in transit would cause a saving to shippers of $40,000,000 in interest annually.

This estimate of the direct saving made to American business by the reduction of the length of time that commodities are in transit is, however, much too conservative. The reduction of the time commodities are in transit has reduced the length of time required to "turn over" all the commodities shipped by railroad. Whatever reduces the length of time required to turn over any part of the capital that a business concern has invested will, other things being equal, increase its profits. The average profits made in business in this country exceed, of course, the average current rate of interest on borrowed money, and the true measure of the value to American business of the extent to which freight service has been speeded up is the increase in business profits which this improved service has made possible.

It is an interesting and important question how far this increase in the number of miles freight is moved daily can be carried, with the resulting benefits to shippers and curtailment of the number of cars required by the railroads to handle a given amount of business. An increase of freight business without a corresponding increase in all the facili-

ties for moving freight cars immediately reduces the average speed with which cars can be moved, and increases the number of cars actually used more in proportion than the increase of traffic. The service rendered by the railways in 1923 was good, but the average distance moved daily by each used car was less than in either 1921 or 1922 because freight business increased more in proportion than the facilities for handling it, and the average number of cars used daily was 372,000 more than in 1922. The large investments of new capital made in 1923 and subsequent years, and improvements in methods of operation, have resulted in the facilities available for moving freight cars increasing more in proportion since then than the demands of traffic. Another increase of freight business unaccompanied by a corresponding increase in facilities for keeping freight cars moving would, however, cause congestion, slow down the movement of cars, reduce or wipe out the car surplus and thus impair the service furnished to the shipper, as similar developments have in the past.

Service of the kind now being rendered can be maintained only by keeping the physical development of the railways and the improvement of their operating methods fully abreast of the increase of freight business.

A Mechanical Department Development

THE address at the opening meeting of the season of the New York Railroad Club featured another development in personnel work which has practically passed beyond the experimental stage. This development is the recognition by a number of railroads that, at least as far as their mechanical departments are concerned, human relations require the same kind of expert technical direction by trained men that the mechanical processes require. These railroads have, therefore, abandoned rule-of-thumb methods in their labor relations and have entrusted their direction to staff officers chosen because of their study and experience in this particular field.

As a result of the shop crafts strike in 1922 a pronounced change was brought about in the relations of the mechanical departments and the workers. About 30 per cent of the railroad employees are connected with the maintenance of equipment department, the larger percentage of these being concentrated at the shops, some of which are of considerable size, and at the enginehouses and repair yards. The mechanical department superintendents have always had a variety of specialists on their staffs, practically all of whom have been interested in materials, methods and practices. During the past few years there has come about a more or less distinct recognition of the importance of the human element and the necessity of using more intelligent and scientific methods in dealing with the workers. The shop strike did much to crystallize this development.

The principal speaker at the meeting of the New York Railroad Club was Edwin F. Daley, an assistant to the superintendent motive power and equipment—director of personnel—of the Delaware, Lackawanna & Western. Mr. Daley has had a long experience in the mechanical department of railroads and industrial corporations, and was appointed to his present position about a year and a half ago, giving all of his time to personnel work. Even before that time, however—as much as two and a half years ago—David A. Henderson was appointed personnel supervisor on the staff of the superintendent motive power of the Long Island Railroad, and only last June F. H. Becherer, formerly general car inspector, was made assistant to the mechanical superintendent of the Boston & Maine. Mr. Becherer in his former position had been a large factor in helping to develop the foreman's clubs on the Boston & Maine, and in his new position is devoting all his time to personnel problems. Doubtless there are other mechanical departments with men doing the same class of work as the three above mentioned, but the development has taken place so quietly that few recognize the extent to which it has gone. Employee representation, as exemplified in the mechanical department by various forms of company unions, and the program of organized co-operation on the part of the shop crafts labor unions on some of the roads, have been important factors in throwing into relief this whole question of improving the relations between the management and the workers, with a resulting marked improvement in the morale.

Past Practice May Be Wrong

THE railways as a whole have recruited more satisfactory forces for maintenance work this year than at any time since the outbreak of the world war. There has been an ample supply of labor in most localities and it has been free from any serious unrest. As a result the roads secured a greater return from a given expenditure than in any year during the last decade.

As the time for completing the more active portion of the season's program approaches, the question arises whether the roads will take any steps to retain this more efficient labor or whether it will be laid off in accordance with the long established custom of reducing forces to a "winter basis". It has long been recognized that this plan of drastic reductions in forces does more to destroy the efficiency of the maintenance organization than any other single measure that is followed. Yet it is repeated from year to year with little consideration of the development of means of eliminating this drain.

Such a condition warrants the serious study of railway officers. In part it may be inherent in operations that are essentially seasonal in character. In part, however, it is the result of practices that have become established through long following the course of least resistance. The best policy to follow cannot be settled by off-hand opinion but requires study and trial. It can be demonstrated readily that much work cannot be done during the winter on the northern roads. Such trials as have been made, however, have shown that a considerable amount of work which has long been regarded as essentially summer work can be done as well in the winter, all things considered. Not many years ago it was the practically unanimous opinion that rail must be laid in the summer and this opinion still prevails in some quarters, but the tonnage laid during the winter is increasing each year and the roads which have laid the most rail during the winter are most favorable to this practice. Similar changes can undoubtedly be made in other operations which now require the attention of maintenance forces during the summer. Any work which can be transferred from the summer to the winter without increasing its cost will tend to stabilize forces and increase their efficiency.

The most satisfactory solution of this problem is to increase the amount of work which can be done during the winter and thereby provide productive employment for the forces. To the extent that this can be done their retention during the winter is justified. On some roads it has been found possible to rearrange the season's program so as to reduce the fluctuation between summer and

winter forces to one fourth of that which formerly prevailed and at the same time lower the cost of the work. But even in effecting such reductions in force as are found necessary, a further expedient followed in some instances is to divide the work allowance between the men whom it is desired to retain, giving each his proportion of work and thereby retaining him on the payroll where he is available for emergencies and for the next season. Measures such as these have long been followed in other industries which have learned that a large turnover in forces is destructive of efficiency. They are worthy of study by railway officers now when the annual "rout" of maintenance of way forces is impending.

Why the Public Must Still Be Educated

THERE never was a time when intelligent and energetic work by the railways to educate public sentiment was more needed than it is now.

This may seem a paradoxical statement in view of the fact that thus far this year the roads have earned more net operating income than in any corresponding period since the war. But this increase in net operating income constitutes the main reason why constant, intelligent and intensive public relations work is required. One of Dickens' famous characters, Mark Tapley, was always optimistic when everything seemed to be going wrong, and sank into the depths of pessimism when things took a turn for the better. Mark's philosophy was not entirely unsound. In some measure it might well be adopted and acted on by the railways.

For a long time after the railways were returned to private operation the net operating income earned by them was so small that it could be cited as evidence that the Transportation Act did not "guarantee" them any fixed return and that their rates were too low rather than too high. This evidence was not sufficiently convincing to prevent a general reduction of rates in 1922, but the Interstate Commerce Commission has refused since then to make any general reduction of rates, to abolish the Pullman surcharge or to reduce the rates on grain and grain products, and public sentiment has supported it in doing so. The general railroad situation is changing, however. The railways of some regions are earning a substantially increased net operating income. The railways of the western district, after having borne with an entirely inadequate net return for five years, are seeking a general advance in freight rates.

The changes in the railroad situation which have occurred and are still occurring have increased the necessity of presenting and emphasizing to the public the essentials of a fair, constructive and permanent policy of regulation. There are being published throughout the country newspaper reports showing the recent increases in railroad net operating income and in the market prices of railroad securities. It is necessary that these increases in net return and in the prices of securities shall continue until both are on a higher basis than now if the credit of the railroad industry is to be fully re-established and its ability to continue to render good and adequate service is to be assured. Both the net returns being earned by most railways and the market prices of their securities are still relatively much lower than they were before the war.

The average citizen, or even the average leader of public opinion, spends little or no time, however, in comparing the pre-war and post-war earnings and security prices of the railways or in considering the significance of the differences in them. What they are now reading and hearing for the most part is that the railways as a whole are doing better than within recent years and that some railways are doing very well. Their natural tendency is to conclude that the railways are doing well enough, and probably too well. If this tendency is to be counteracted it must be done by spokesmen of the railways. If it is not done by them it will not be done at all, and a general sentiment will develop that will cause regulation which will arrest the improvement in the railroad situation.

The testimony introduced by the western lines at the recent hearings in Chicago in support of their petition for an advance in rates was admirable in its completeness and conclusiveness. A plan was carried out for furnishing concise and lucid summaries of it to the press as fast as it was presented, and the essential features of it have been given widespread publicity. If, however, enough western people are to be made to understand the situation and problems of western railways the facts regarding them will have to be driven home again and again in every possible way and through every available channel. In some respects the problem of railways in certain other territories is even more difficult, because experience has shown that it is much harder to convince people that a railway that is doing well should be allowed to continue to do well than it is to convince them that a railway that is doing badly should be allowed to do better.

Most students of the railroad problem have believed that it could be solved if the most important provisions of the Transportation Act—those dealing with ratemaking and labor controversies—were retained and carried out in the way they were obviously intended to be when Congress enacted them. How they actually are to be applied to a group of roads that has been and still is earning much less than a fair return is now in process of determination in the western rate case. How they are to be applied to railways earning as much as or more than the so-called "fair return," but which on the average since the Transportation Act was passed have earned much less than a "fair return," must also in the near future be determined. The way these questions are settled will depend in the long run upon whether the public recognizes the fact that it is to its own interest for the railways to enjoy reasonable prosperity, and that this means that if their earnings are to yield less than the so-called "fair return" when business is poor they must yield more than the so-called "fair return" when business is good.

This point is the most vital and at the same time the most difficult regarding which public sentiment must be educated. It is the crux of the entire railroad problem. Unless the railroads do earn over periods of years an average return at least equal to that which the Interstate Commerce Commission has held reasonable it will be impossible for them under private ownership to continue to function as the welfare of the country requires that they shall. When railroad business and earnings are poor most people admit this but say that the railways, like any other industry, must not expect to prosper when business is poor. On the other hand, when business is good and railroad earnings are large many of the same people, misled by exaggerated reports or false theories, are disposed to say that the roads are making too much and should reduce their rates. Spokesmen of the railways have no more important duty to perform than that of meeting the issue squarely and sparing no effort to convince the public that in periods of prosperity the railways must be allowed to prosper along with other industries, and that if government regulation does not allow them to do so then it is a matter of only a few years until government regulation and private ownership and managemet will have to be discarded.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Centenary of Railways. "Historical sketch showing the evolution of the London Midland & Scottish Railway with track mileage of upwards of 20,000 miles, from the Liverpool & Manchester Railway, with track mileage of 31½ miles." Illustrated from old prints and documents. 34 p. Published by London Midland & Scottish Railway Co., London, Eng. *6d.*

The Connecticut River Banking Company, 1825-1925, by H. W. Erving. A history commemorating the centennial of the company, and containing much of interest in the text and illustrations to persons interested in railroad and transportation history generally in Connecticut. Author is vice-president of the company. 216 p. Pub. by Connecticut River Banking Co., Hartford, Conn. $3.

World Food Supply—a Selected Bibliography, by Margaret T. Olcott, U. S. Dept. of Agriculture Library Bibliographical contributions No. 9. References to material on origin, transportation, including transcontinental and trans-oceanic transportation of meat and other foodstuffs, and consumption of food arranged under general discussions and by countries. Indexed. 68 p. Issued by Library, U. S. Dept. of Agriculture, Washington, D. C. Apply.

Periodical Articles

Boston & Maine Revitalized. United States Investor, Sept. 19, 1925, p. 1-7.

Heroes of Map-Making, by Guy Elliott Mitchell. Work of U. S. Geological Survey in the topographic mapping of the country, including map showing sections for which topographic maps are available. "From a study of these . . . railroads can be located or armies maneuvered." p. 221. Scientific American, Oct., 1925, p. 221-223.

Norman W. Kittson, a Fur Trader at Pembina, by Clarence W. Rife. Biographical sketch of an associate of James J. Hill in railroad building in the Northwest. Minnesota History, Sept., 1925, p. 225-252.

The Plurality of Index-Numbers, by Prof. F. Y. Edgeworth. Critical analysis of types and value of index-numbers used for various purposes. Economic Journal, Sept., 1925, p. 379-388.

The Puff of a Locomotive Is Music to His Ears, by Edward Hungerford. Biographical sketch of President J. M. Kurn of the St. Louis-San Francisco Ry. American Magazine, Oct., 1925, p. 36-37, 140-148.

The "Scrap Man" Saves His Railroad $100,000 a Year, by Robert H. Denehey. John L. Hanna, General Material Supervisor, Pennsylvania Railroad. American Magazine, October, 1925, p. 70.

HARRY M. WILLIAMS, of Little Rock, Arkansas, a veteran locomotive runner on the Missouri Pacific, appeals to automobile drivers to do him the courtesy of acknowledging his whistle warnings. "When you are driving along a highway which is parallel to the railroad, and which turns and crosses the tracks, *put out your hand,* when you hear the locomotive whistle; that will let the engineer know that his warning is understood." Also, in many cases, the men on the engine are reassured by seeing the automobilist slacken his speed. "Let us have an understanding with each other," says Mr. Williams.

Letters to the Editor

[The RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]*

What About Our Pension Systems?

NEW YORK

TO THE EDITOR:

You have given a great deal of space in your columns to personnel problems but there is one important feature affecting employee relations about which very little has been said, and that is pensions. About 75 railroads are paying pensions to superannuated employees. Most of these have adopted formal pension rules but a few still are on an informal basis. Most railroad officials recognize the necessity of providing a humane method of retiring employees who have spent their best years in the service and who have reached the usual age of retirement. Especially the older employees look forward to the enjoyment of their pension in their old age and there is no doubt that pension allowances have a beneficial effect on the morale and efficiency of the active working force. So far as I know every railroad pension plan is so constructed that no employee has a legal claim to a pension, but after a pension plan has been put in effect the moral obligation becomes greater each year and after a period of years a pension plan cannot be discontinued or changed so as to adversely affect the employee without disastrous results.

This leads up to the main question—how long can American railroads stand the financial strain of their present pension plans? Experiences both here and abroad show that, for the first few years, the total cost of a formal pension plan is comparatively small, but this cost has a tendency to increase at rather an alarming rate over a period of from 40 to 60 years. Costs are determined by the amount of the individual allowance and the number of pensioners. With one exception, the railroads of the United States base the individual pension allowance on the amount of earnings during a period of years immediately prior to retirement, and length of service, both of which are unknown quantities until the employee is actually retired. The number of employees who will eventually become eligible for pensions under formal plans is affected chiefly by life expectancy and labor turnover. Space does not permit further discussion, but it is obvious that under present plans it is impossible to estimate costs accurately more than a year or two in advance and it is also obvious that the trend of costs will be upward for many years, largely due to accrued liabilities at the time a pension plan is installed.

Closely allied to costs is the method of financing. At present there is no serious attempt to fund pension costs on American railroads. It is the general practice to pay pension costs from current revenue and charge it to operating expense and in this way current operating revenues are made to liquidate liabilities that have been accruing for years. What assurance has anyone that current revenues in 1950 will be sufficient to stand the strain of pension liabilities that are accruing in 1925?

In addition to the future uncertainties of the present method of financing it is the most expensive method that could be devised. On one large railroad the average age of employees retired in 1924 was 67 years 3 months, the average length of service 39 years 11 month and the average allowance $46.70 per month or $560.40 per year. By referring to American mortality tables we find that life expectancy for men at the age of 67 years is 10 years, so that the average charge to operating expense on account of each employee retired in 1924 is likely to be very close to $5,604. By referring to annuity tables we find that the value of a life annuity of $560.40 at age 67 is $4,550.45, calculated at 4 per cent interest. By referring to compound interest tables we find that an appropriation of $46.04 per year for 40 years with accumulations of interest at 4 per cent compounded annually will provide the same amount. In other words, based on the averages for 1924 the charge to operating expenses on this railroad on account of each employee retired during 1924 will be $5,604, spread over a period of 10 years, while if the plan had been funded at 4 per cent compound interest the total charge to operating expense would have been $1,841.60, spread over a period of 40 years, a saving of approximately 67.1 per cent.

This comparison is made in the simplest possible way. There are many complications that enter into the formulation of a plan that make it a real problem. This problem must be solved sooner or later and the sooner the better.

J. C. CLARK.

Why College Graduates Fight Shy of Railroads

NEW YORK CITY

TO THE EDITOR:

I have read with a great deal of interest many of your letters and editorials on the College Man and the Railroad.

I do not believe there is any merit in the assertion sometimes made that the railroads do not want college men. A proper college training cannot fail to be an asset which if added to a man's other qualities should make him worth more for having it. As regards the assertion that the college men do not want to work for the railroads, my observation is that relatively few college men care to go into railroad work as compared to those who desire to work for other large corporations. It is true that there are just as good opportunities for college men on the railroads as there are for non-college men. This, however, is not going to attract college men. They want to feel that with equal physique and character they are going to get back in advancement part of the money and effort they have spent on their educations. I am speaking particularly of engineering graduates. They also are looking for places where the opportunity for college men seems to them to be better than it is on the average railroad.

I do not think that college men shy away from the railroads because they are unwilling to undergo the training which railroad men must necessarily get. I believe that many of them shy away because *they do not get any systematic training there.* Their work is neither planned nor supervised with a view, first, to taking advantage of their capabilities, and second, of developing them as quickly as possible so as to obtain the maximum utility from their services. The attractive thing about other corporations, particularly the large electric light and power companies, is that they have a well established and definite training system for cadet engineers. No corporation is going to attract many college men to enter it on exactly the same status as men who have had no preliminary training. A professional education today costs a great deal of money and a man is going to work where he can be reasonably assured of an adequate return in promotion upon the investment he has made in training without having too heavy a millstone of seniority hung around his neck.

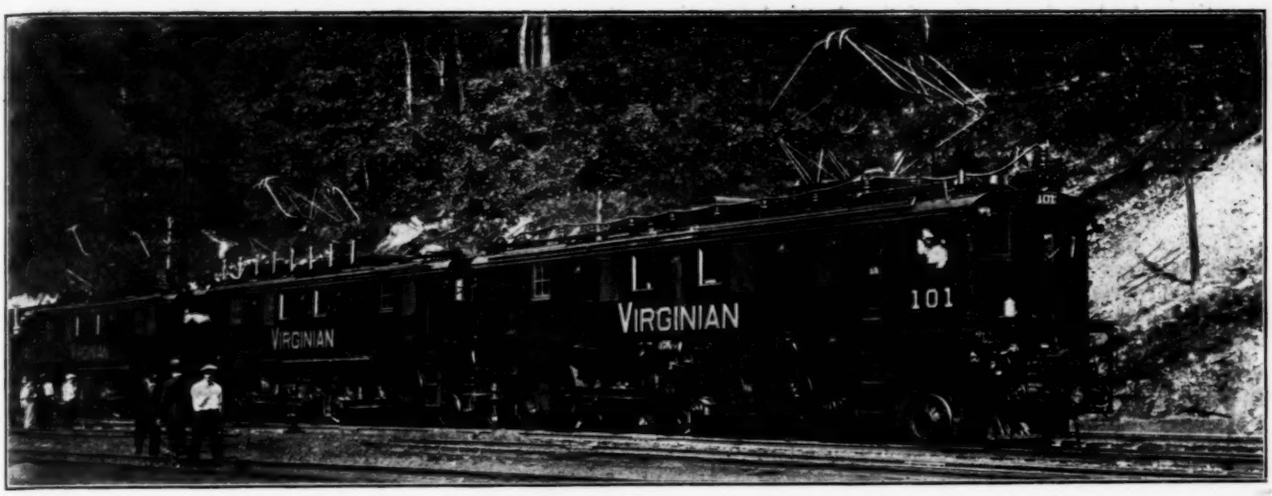
As a rule college men do not enter the transportation department. One great trouble with the railroads from the college man's standpoint is that they conform too closely to Lord Claude Hamilton's description of the British railways which he said are built like a battleship, that is, divided into water tight compartments. No ambitious college man, who is of the right timber to make a general manager out of some day, wants to spend all his time in one department of a railroad and there is no earthly reason why he should be required to do so. Nobody can learn everything that a railway executive ought to know by working in one or two departments. The college man realizes that on very few railroads is there any definite system of training which will enable him to work in the different departments and at a compensation upon which he can live. A college man entering railroad work is not asking for any special preferment except one, and that is to be given the opportunity fast enough and hard enough to enable him to show what he can do, to enable him to grow, to keep him from stagnating or getting narrow.

The mining companies and the electric light and power companies have no trouble in getting college men to reside in obscure and remote districts away from the attractions of social life. The reason the men in many other industries than the railroads are willing to do this is because they know that there is a definitely organized and supervised system of training and promotion under which they are working and under which they will be given opportunities to demonstrate their fitness for promotion. Until such a definite training system properly organized and carried out can be established the railroads are not going to get their share of the output of the colleges.

I lunched with an officer of an important electric light and power company a few months ago who was congratulating himself that his company had succeeded in getting its scouts into the engineering schools three months ahead of the scouts from the other big electric companies and that his company that year was to have the pick of the graduating classes and would receive into its employ men who not only graduated in good standing but whose careers throughout their college life had been carefully watched to determine the suitability of these particular students for putting through the companys' thoroughly organized training mill. I have never heard the manager or department head of any railroad crowing over an officer of another road because his company was going to get into its service, after having watched them for four or five years, the pick of the men in the country whose college training had been along lines intended to fit them for railway work.

AZEL AMES.

BUTTER exported from Canada during the twelve months ending June, 1925, amounted to 25,096,120 pounds, valued at $8,934,794, a decided increase over the figures of the previous year, when exports amounted to 13,668,379 pounds, valued at $5,031,634, according to a report issued by the Federal Department of Agriculture. Shipments were made to the United Kingdom, the United States, South America, South Africa, West Indies, Alaska, China, Japan, Germany, Belgium, Cuba, Holland, New Zealand and many other countries.

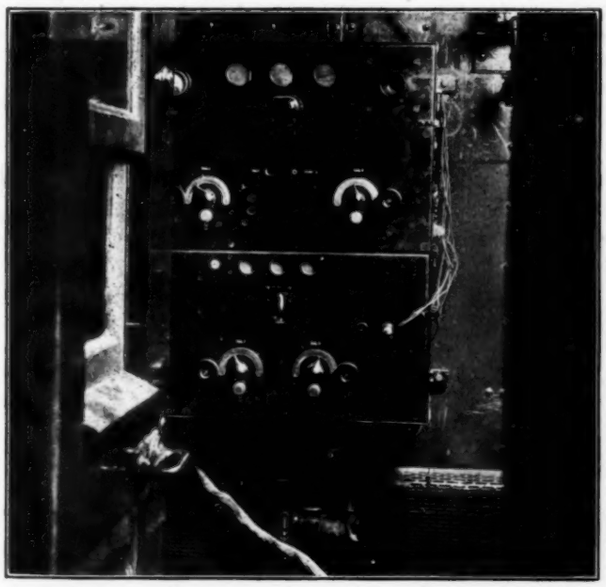


A Virginian Locomotive in the Yards at Mullens, W. Va. Aerial Can be Seen on Roof of Second Cab

Virginian Starts Electric Operation

Wired wireless communication used between front and rear end of train

ELECTRIC operation on the Virginian was formally inaugurated on Monday, September 21. Tonnage trains are now operated electrically from Mullens, W. Va., up a 2.07 per cent eastbound grade to Clarks Gap, W. Va., a distance of about 15 miles. The overhead catenary has been completed to a point about two miles



The Signal Sending and Receiving Set

east of Princeton, W. Va. Princeton is 36.5 miles east of Mullens. Four electric locomotives have been delivered and at present these are used only on the grade between Mullens and Clarks Gap. The complete order for locomotives includes 10 three-unit and 6 single-unit locomotives. The single units will be used for pick-up and switching service.

Operation

Under steam operation a train weighing from 5,500 to 5,700 tons is taken up the grade by a 2-8-8-2 road locomotive and two 2-10-10-2 pusher locomotives at a speed of about seven miles an hour. The pusher locomotives are the heaviest steam locomotives ever built and weigh in working order (including weight of tender) 898,300 lb. The weight of the road engine and tender in working order is 740,100 lb.

With electric operation one road engine and one pusher are used. A number of trains, some weighing a little less and some slightly more than 6,000 tons net have been taken up the 2.07 per cent grade by two electric locomotives at 14 miles an hour without exceeding the maximum allowable temperature rise of the motors. Each three-unit locomotive weighs 637 tons and is normally rated at 7,125 h.p. During acceleration a total of 20,000 h.p. is applied to the train. Surprisingly little difficulty has been encountered in the operation of these trains. They are made up for the most part of Virginian cars of 218,000 lb. capacity and the average load per car as measured over the scales at Norfolk is 116 tons. Each car empty weighs 40 tons.

Nearly all of the heavy tonnage movement on the Virginian is east-bound coal and from the eastern end of the electrified section trains will be hauled to tidewater by steam, in accordance with present practice. The grade favors traffic practically the entire way and electric operation on this section is at present unnecessary.

Power Supply

Power for the electrified section is supplied by the railroad's own power house located on the New river at Narrows, Va. It has a capacity of 80,000 h.p. There are four turbine driven generators of 15,000 kw., normal; but three are sufficient to carry the maximum demand of the railroad. The transmission line and overhead catenary construction are of the noncorrosive type. The power house and substations are of unusually substantial con-

struction. A shop for service of the electric locomotives is being completed at Mullens.

The locomotives were built by the Westinghouse Electric & Manufacturing Company and the American Locomotive Company. The overhead construction was erected by Gibbs & Hill, designing and construction engineers.

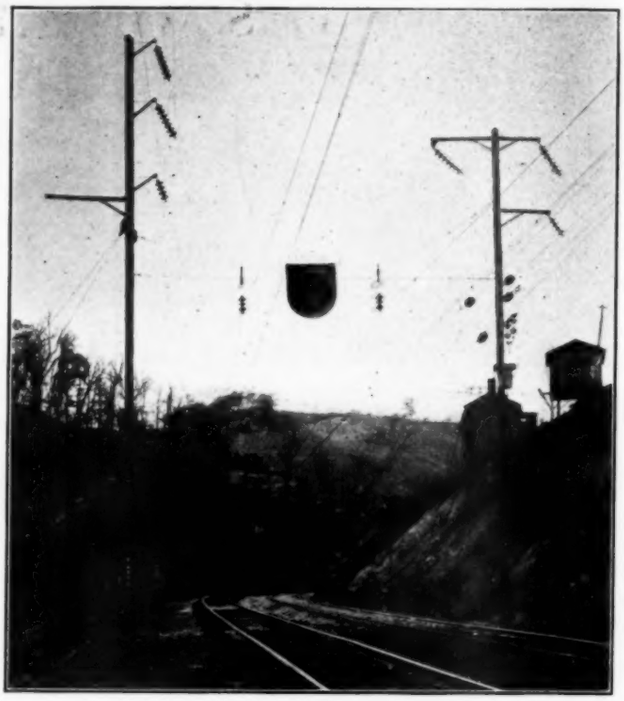
Signal System

Two of the electric locomotives are equipped with a wired wireless system for communication between the front and rear end of the train. The apparatus is now in an experimental stage, but may later be adopted as regular equipment. On the section of road now being operated electrically, there is very little tangent track; there are a number of tunnels and few places where one end of the train can be seen from the other end. These conditions make the communicating system particularly desirable.

The apparatus consists essentially of a standard radio sending and receiving set located in the No. 2 cab on each locomotive and connected to a short aerial on the roof of the cab. This aerial is parallel to the trolley wire and when a signal is sent out it follows the contact wire and is picked up by the aerial on the other locomotive.

Two kinds of signals can be used, namely, howler and telephone. At present only the howler signals are used in the locomotive cabs. In each cab is a control box and a horn or loud speaker. A short piece of rope hangs out of the control box and when this is pulled it causes a howl or whistling sound to come out of the horn in the other locomotive cab. Regular whistle signals are used. If telephone communication is desired as the system is now installed, it must be carried on from the middle locomotive unit. In its present state of development, the telephone works well when the train is standing still but not when the train is running. No such difficulty is encountered with the howler. Consideration is now being given to the possibility of using similar apparatus on steam locomotives using wayside wire lines or running rails as carriers.

The sending and receiving set used is housed in a metal cabinet, 28 in. wide, 32 in. high and 10 in. deep. Power for the operation of the set is derived from the 32-volt control battery on the locomotive. A small motor generator set running from the battery supplies high voltage current for the antenna. This set is mounted on a base 20 in. long.



Typical Overhead Construction Showing Low Wire Warning Sign

The two machines of the set are direct connected and each one is slightly larger than a ¼ h.p. washing machine motor. The control box in the cab is 10 in. long, 5 in. high and 3 in. deep. The apparatus was designed and built by Westinghouse radio engineers.

Ewing Galloway

Heavy Freight Train Passing Over the New York Central's Castleton Bridge

Traveling Engineers Continue Sessions in Chicago

Paper on train control by E. Von Bergen excites active discussion on convention floor—Other reports

FOLLOWING the presentation of the committee report on mechanical stokers at the thirty-third annual convention of the Traveling Engineers' Association in Chicago, September 15 to 18, as reported on page 533 of the September 19 *Railway Age,* the report was thrown open for discussion. Practically without exception, comments on the report were favorable, various members emphasizing the points made by the committee that the modern stoker of improved design is practically fool-proof in operation, low in maintenance cost, with reasonable care and attention to lubrication, and decreases railroad operating costs. The last result is accomplished because the stoker makes possible an increased tonnage rating of locomotives, prevents many train delays due to man failures in firing, and under certain conditions saves fuel over the older method of hand firing. In addition, the advantage of the mechanical stoker as a safety device was emphasized in that it enables the fireman to keep a closer watch for roadway signals which may be missed, particularly if he has just put in a fire and is partially blinded by the intense glare from the firebox. In commenting on maintenance, one of the members said that the stoker engines on a series of locomotives built in 1913 have never yet been taken from under the locomotives, all repairs having been made at outlying points with the stoker engines still in place.

One of the papers which excited the most active discussion on the second day of the convention was that on automatic train control by E. Von Bergen, general air brake and lubricating engineer of the Illinois Central. Mr. Von Bergen compared the various types of train control, speaking strongly in favor of the continuous control type with cab signals and without the split reduction, which extensive braking tests on the Illinois Central apparently indicate are not necessary. An abstract of this paper and the ensuing discussion follows.

Continuous Train Control with Cab Signals

By E. Von Bergen

General Air Brake and Lubricating Engineer, Illinois Central, Chicago.

At this time last year there were but four installations of train control that could be termed service installations, the remainder being test installations. Of the four, three were of the intermittent contact type, viz., the Miller on the C. & E. I., the Regan on the C. R. I. & P., and the American on the C. & O., and one of the continuous induction type, viz., the Union on the Pennsylvania. Since that time practically all of the remaining 45 roads embraced in the first order issued by the Interstate Commerce Commission have contracted with manufacturers for their respective installations, quite a number having a division in operation.

As none of these roads have selected a contact type of device, but have all chosen induction types, either of the intermittent or continuous type, it is apparent that railroad operating officers who have studied the problem are practically unanimously of the opinion that the development of the induction types has rendered the contact types obsolete. The objections which have for years been set forth against contact types, viz., clearance problems, shock resulting when locomotive apparatus comes in contact with wayside, interference of ramps with snow plows, etc., were overcome with the development of the induction types, and once it was proved conclusively that the wayside indication could be transferred aboard the locomotive positively and reliably without any contact between locomotive and wayside apparatus, and this at approximately the same cost, the death knell of the contact types was sounded.

Intermittent vs. Continuous

Although an intermittent type of device meets the requirements of the I. C. C. and generally speaking the first cost of any division installation of the continuous type is substantially greater than that of the intermittent, there is little benefit to be derived from an intermittent device unless speed control is incorporated, and the disadvantages of speed control will be discussed later.

With an intermittent automatic stop, all that can be expected is that the device will apply the brakes and stop the train in the event the engineman fails to stop for a stop signal, or to take proper action recognizing same. From a practical viewpoint, it is apparent that if two or three hundred thousand dollars must be expended for an automatic stop, it is good business to spend 30 per cent or even 50 per cent more, if funds are available to purchase a continuous stop device which will not only provide all that is provided by the intermittent device, but will in addition provide a continuous light signal in the cab keeping the engineman advised at all times of the condition of the track ahead. This device will also apply the brake at any point in a block when conditions ahead change from "clear" to "danger" instead of performing this function only when passing a fixed point at the entrance to a block. Conversely while a train is traversing a "red" block, and conditions ahead change to "clear" the condition is immediately reflected on the locomotive, and the engineman is free to proceed at full speed. This will very often facilitate operation, whereas with an intermittent device the train under these conditions would be restricted throughout the block to that speed imposed by the indication at the entrance to the block.

Another substantial advantage provided by the continuous cab signal is that with its use the present rule requiring a train to stop at a "stop and proceed" automatic block signal becomes entirely unnecessary. The cab signal should show but two indications, viz., either green or red. As one of these indications is constantly confronting the engineman in the cab, the present rule should be changed to read: "A green cab signal indicates track ahead is clear and authorizes maximum speed. When cab signal changes to red, the speed of the train must immediately be reduced to that at which train can be stopped within distance track is seen to be clear."

It is essential that an audible cab signal, preferably an

air whistle, be provided to sound when cab light signal changes from green to red, to attract the engineman's attention, should he be looking away when the change occurs.

Forestalling Feature

The forestalling feature is a device incorporated in an automatic stop, so arranged that when operated by the engineman within a given period before and after the train control apparatus on the locomotive receives a stop indication from the wayside, a brake application is prevented, and the engineman is free to control his train and manipulate the brakes as his judgment dictates. If he fails to operate the forestalling device within the time allotted, the brakes will be applied and the train brought to a stop regardless of any action he takes. When Order 13413 was first issued by the Commission, the forestalling feature was prohibited. This made the installation of an automatic stop on nearly all large roads entirely out of the question, as a train would be brought to a stop every time a stop indication was encountered, regardless of the action of the engineman, and in numerous cases would have imposed two stops where one is now required. It would also have required doubling of hills by many heavy freight trains on roads where automatic block signals with tonnage signals are employed. This would have produced an intolerable operating condition, and many roads were thus forced to select devices embracing speed control at a vastly increased cost and involving complicated mechanism difficult to maintain. In its decision handed down in July, 1924, covering the hearing on the second Order 13413, the Commission modified its first order to the extent of allowing the use of the forestalling feature, but reserving the right to withdraw this permission at a future date if found necessary. This has been the means of saving large sums of money that would have been expended for speed control apparatus. The theory on which the forestalling feature had been objected to was that an engineman might forestall a brake application and run into collision with another train in a manner similar to cases which have occurred when automatic block signals were disregarded; but an automatic stop has been in service for more than ten years on one road and no accident has ever occurred that could be attributed to the use of the forestalling feature. It may be said that possibly no accidents would have occurred on that division if no automatic stop or train control had been employed, and there is, of course, theoretical basis for argument that a collision might occur through the abuse of the forestalling feature by an engineman, but it is difficult for us as practical men with years of locomotive experience to conceive that with a continuous cab signal an engineman would deliberately disregard a red light staring him in the face in the cab and proceed to collide with another train.

Speed Control vs. Automatic Stop

Any train control apparatus on locomotives requires a high degree of maintenance, but with speed control added, this is increased. The experience of the writer has shown that of the maintenance troubles arising, a large proportion (probably 50 per cent) develop in the speed control mechanism. It has been shown that with properly trained men and intensive supervision, the stop apparatus, both electrical and pneumatic, can be maintained in good working order, but even with the highest degree of maintenance many troubles occur in the speed control apparatus, causing undesired stops and cutting out of the device en route. Numerous tests have developed that the lowest speed at which it is practical to establish the functioning of the speed control apparatus on long freight trains is 20 miles an hour; in other words, if it is set to impose a lower speed restriction it will apply the brakes when this speed is exceeded, and although intended to release the brakes and allow the train to proceed immediately the speed is reduced below the restriction, it does not so work out in practice and the train is brought to a stop. This also frequently occurs when the speed is set at 20 miles an hour. Analysis of all the collisions which occurred on one large railroad for 10 years past developed there was not one instance where an engineman had passed a stop signal and was aware he had passed it that the speed of the train at the time of the collision was greater than 15 miles an hour. With such a record it would be folly to expend the large sum required for the purchase of speed control apparatus, as well as to incur the heavy maintenance cost of and troubles involved in an apparatus which can only be expected to limit the speed of train to that which is substantially higher than those at which collisions occur under conditions which it is presumed to prevent.

Speed control is a beautiful theory, and many theoretical arguments can be advanced by technical men to prove its necessity, but when its functions are analyzed on a practical basis, it is difficult to justify its existence, except possibly in cases where unusually dense traffic prevails and it is necessary to operate many fast trains on very close headway.

Elimination of Wayside Signals

With a continuous induction system, incorporating visual cab signals, there appears no good reason why wayside block signals cannot be dispensed with. Practically the only objection to this procedure is that in the event of failure of the electrical apparatus on the locomotive the engineman would be left without any indication whatever of track conditions ahead. The answer to this is that there are thousands of miles of track being operated safely and efficiently today without wayside signals of any kind, and with the remarkable development of continuous induction types of automatic train control during the past few years we have a right to expect them to function as reliably as automatic block signals. Even if more failures of this apparatus occur than with automatic block signals, an occasional train can surely be depended on to safely traverse a portion of a division without the aid of signal protection.

Split Reduction vs. Continuous Reduction

Volumes have been written on the air brake action when the brake pipe reduction is brought about by the train control apparatus. On account of recommended practice covering manual manipulation of the brake valve requiring the application of the brakes to be made with a split reduction, chiefly to allow slack in long trains to bunch before the full application is accomplished, many air brake experts insist that the train control apparatus apply the brakes with a split reduction also. One of the most prominent train control manufacturers urgently recommends this feature. The incorporation of a split reduction feature further complicates an already complicated device. The Illinois Central made braking tests on heavy freight trains ranging in length from 63 to 102 cars at speeds of 8 to 38 miles an hour, and on ascending and descending grades. Tests 1 to 14 inclusive were made with continuous reductions, the brake pipe venting until the train came to a stop, which is the method usually employed with an automatic stop. Tests 15 to 29 inclusive were made with a 7-lb. initial reduction, followed in five seconds with a 17-lb. reduction, which is the method employed by one of the leading train control systems embracing speed control. It is extremely interesting to

note that in none of these tests was a stop attended with a shock that could be termed severe.

The writer has also witnessed many other tests, with both split and continuous reductions with train control during the past three years, on ascending and descending grades, throttle open and throttle closed, and in no case did any damage result from a continuous reduction. In tests where the throttle was closed and the brake pipe reduction started at the same instant on freight trains of 100 or more cars at speeds of 10 miles an hour or less, slack ran in at the rear end with a severe shock with either a split or a continuous reduction. When the brakes were applied at any speed and the throttle held open to stop, the slack action in no case could have been termed severe.

In the light of these tests, and in view of the fact that with an automatic stop incorporating a forestalling feature, the brakes will very seldom be applied by the automatic train control apparatus. The additional expense and complications involved by the split reduction apparatus are not warranted. Where speed control is employed, the split reduction may possibly at times fulfill a useful purpose, as unexpected brake applications will be received more or less frequently.

Conclusions

When financial conditions permit the installation of the most desirable device, an automatic stop of the continuous induction type incorporating the following features is recommended:

1—Continuous visual cab signals.

2—An audible cab signal to attract the attention of the engineman to a change of indication from clear to danger.

3—So designed that the engineman, if alert, may forestall a brake application within a stipulated period of time.

4—Engineman to have an interval of approximately 10 seconds before to 10 seconds after the cab signal changes to "danger" in which to operate the forestalling feature.

5—If the engineman fails to operate the forestalling feature, a brake application will result and continue until the train is brought to a stop.

6—Brake pipe reduction to be at the same rate as a manual service, but to continue until train has come to a stop.

7—Apparatus to consist of the smallest possible number of parts to provide these functions and meet the requisites of the I. C. C.

As the modification of the first order by the Commission, following the use of the forestalling feature, means the saving of vast sums of money in installation and maintenance costs for the railroads compelled to install train control, and selecting automatic stops, and also provides for the least possible interference with the engineman in operating the locomotive in his charge, the members of this assoication can lend invaluable assistance by impressing as forcibly as possible upon the enginemen under their jurisdiction the extreme importance of using the forestalling feature only when they are certain no hazard is involved. If enginemen should make use of this invaluable feature indiscriminately or carelessly and this practice result in a serious collision, it is not unlikely that the Commission would withdraw the permission granting its use, which would force the application of speed control with its complications, troubles and excessive cost.

Discussion

A representative of the Michigan Central stated that this road has abandoned its 20-mile test installation of the continuous train control and is proceeding to install two divisions of the intermittent inductive train stop. He therefore wished to defend the decision of his road in such choice against the argument presented by Mr. Von Bergen. He said that the intermittent inductive type is simple, requires a minimum amount of change in the wayside signaling and meets the requirements of the Commission. He considers the wayside signals absolutely necessary and believes that the majority of locomotive enginemen are not in favor of eliminating wayside signals.

J. B. Stewart (M. P.) reported that the Missouri Pacific has a complete engine division in operation under train control of the intermittent inductive type which is operating with entire satisfaction. He therefore wished to take issue with Mr. Von Bergen as to any concerted approval of the continuous or any other type at this time. Mr. Stewart explained that at certain locations on curves or on bridges speed restrictions are enforced by speed magnets which operate the train control to stop the train in case the speed is over 25 miles an hour.

E. Wanamaker (C. R. I. & P.) stated that the Chicago, Rock Island & Pacific has been operating a complete engine division under train control protection of the intermittent ramp type with speed control for the past 18 months and that results have been satisfactory in spite of severe winter weather.

L. F. Howard (Union Switch & Signal Company) stated that his company is prepared to furnish apparatus to give either the split reduction or the continuous reduction, whichever the railroad desires. On double track there may be the liability of accidents caused to other trains due to buckling of train where continuous reduction is used that might be eliminated by the split reduction. In explaining the desirability for speed control Mr. Howard said that braking distance can be fixed only when speed is considered and that the function of speed control is to limit the speed on approaching the brake application point such that the train will be stopped in a fixed distance. It was also his contention that speed control is quite desirable in occupied blocks. In Mr. Howard's opinion the cab signal can be developed to be as reliable as the wayside signal. However, this function will depend on future developments.

C. A. Lyons (Regan Safety Devices Company) brought out that there are certain places such as in yard limits on bridges and in tunnels where train stops are undesirable and that such stops may occur with the continuous system but not with the intermittent system because the braking points are fixed in the latter system. He explained that with speed control the train can be continued in motion at a definite speed, thus facilitating movements and eliminating stops. Mr. Lyons answered one objection to the ramp by stating that notches can be cut in the aprons of spreaders, snow plows, etc., to clear the wayside ramps satisfactorily. If proper sized exhaust ports are provided Mr. Lyons stated that in his opinion continuous reduction will give satisfactory air brake operation on almost any road.

E. Von Bergen (I. C.) in closing the discussion on his paper, answered several of the points brought up. He agreed with the Michigan Central representative that wayside signals should not be eliminated if the intermittent train stop system is used. However, in his opinion many enginemen will prefer a cab signal to wayside signals if given their choice after experience with both. In reply to Mr. Lyons he said that in his opinion if conditions are such that the train should be stopped, the quicker it is stopped the better, regardless of the location and without waiting until a designated point is reached.

Results of Improper Handling of Locomotive and Air Brakes

Assuming that good judgment and sound principles have been considered in making rules and laws governing the building as well as operation of brakes on trains, the first thing to consider is the maintenance of this equipment so that it will respond when desired according to

laws and rules that were made to work with the builder, as well as to the operator's ideas and instructions.

If this is done, the next thing to consider is the good judgment of the engineer in the operation of the locomotive and brakes to avoid violent slack action in applying or releasing the brakes when slowing or stopping a train.

It is the opinion of the committee that with long freight trains many draw-bars and draft riggings are damaged and severe shocks in slack action (damaging the lading) result from closing the throttle abruptly applying the brakes on the engine at the same time as on the train before the slack has had time to adjust or bunch, and releasing the brakes while the train is in motion with the head end moving faster than the rear.

It is far from the intention of the committee to suggest or recommend how the different railroads should handle their trains or instruct the men in the operation of freight trains. However, it is our opinion that the best way to reduce the damage to equipment and lading is that the engineer set the brakes while the slack is stretched, then gradually close the throttle until the train comes to a rest with no steam in the cylinders. Further, since we have a constantly varying piston travel, the engineer is never sure when the brakes will take effect after any certain brake pipe reduction; therefore, with the slack stretched, these conditions will not be so likely to do damage when controlling the train with the brakes as it would if the slack were bunched.

In connection with piston travel the commitete calls your attention to Table I, which shows the difference in cylinder pressure and effective braking power with piston travel of various lengths, as compared with that of eight-inch travel. Table II shows the equalization pressure in brake cylinders from four to twelve-inch travel with the respective brake pipe reductions.

The fundamental enemies of the modern air brake are uneven piston travel and leaks. Uneven piston travel causes a variation in every operation of the air brake system so far as the development of power is concerned.

Table I gives the results of test made to show what is done in a service application with a ten-pound reduction of brake pipe pressure. As a matter of fact, the results actually obtained in service will be from two to three pounds lower than shown in the table on account of leakage, etc. (When the above tests were run there was no leakage and everything was air tight.) The effective braking power is that which would be delivered to the brake shoes for the cylinder pressure given. Assuming that the leverage is designed for 60 per cent braking power at 50 lb. pressure, this percentage being now recommended in freight service for steel cars or wooden cars with steel underframe. In practice eight-inch piston travel is usually taken as standard for freight service.

TABLE I

Piston travel	Cylinder pressure lb.	Effective braking power Per cent	Comparison with 8-in. travel Per cent	
4-in.	52½	63	130	greater
5-in.	41	49	78	greater
6-in.	34½	39	44	greater
7-in.	27½	33	20	greater
8-in.	23	27½		
9-in.	19	23	16½	less
10-in.	16	19	31	less
11-in.	13	15½	44	less
12-in.	11	13	53	less

The proper piston travel is that which will develop approximately 50 lb. cylinder pressure when the auxiliary and brake cylinder pressures become equalized from an initial brake pipe and auxiliary reservoir pressure of 70 lb. when a 20-lb. brake pipe reduction is made. This 50-lb cylinder pressure will then be the limit of a full service application, and should be obtained simultaneously on all cars. Table II shows approximately the pressure at which the cylinder and auxiliary reservoir above mentioned will become equalized for different piston travels, and the brake pipe reductions required to give this equalization.

TABLE II

Piston travel	Equalization pressure	Brake pipe reduction
4-in.	59 lb.	11 lb.
5-in.	57 lb.	13 lb.
6-in.	55 lb.	15 lb.
7-in.	55 lb.	16½ lb.
8-in.	51½ lb.	18½ lb.
9-in.	50 lb.	20 lb.
10-in.	49 lb.	21½ lb.
11-in.	47 lb.	23 lb.
12-in.	46 lb.	24 lb.

Particular attention should be given in this table to the large variation in brake pipe reduction, the short piston travel requiring a smaller reduction and equalizing at a higher pressure than in the case of longer travel.

In proof of the committee's contention that 85 per cent of rough handling is done in yards, we call your attention

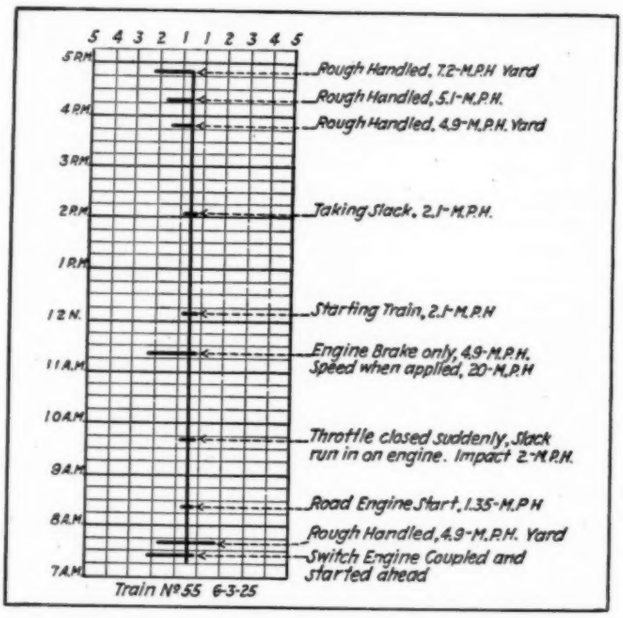


Fig. 1—Record of Impact Machine with 62-Car Train

to Fig. 1, which is a chart taken from a 62-car train. The impact machine was placed in the tenth car from the engine and it shows that 2.1 miles per hour was the greatest impact on the line of road, except that at 11:30 a.m. the engine brakes were used purposely to see just what the impact would be with a speed of twenty miles per hour and the slack gently bunched. Even with this light handling of the independent brake valve, the impact was 4.9 miles per hour, while the machine showed that the car was rough handled in both terminals.

In conclusion the committee wishes to call your attention to the freight claim expenditures (for 1924 on 95 per cent of U. S. and 65 per cent of Canadian mileage):

Damage due to rough handling	$9,584,984.00
Unlocated damage	8,273,312.00
Concealed damage	2,148,475.00
Freight train car repairs (1923 report for Class I Roads, U. S.)	153,509,170.00
A total of	$173,515,914.00

The report was signed by James Fahey, chairman, traveling engineer, N. C. & St. L.; N. Suhrie, road foreman of engines, Penna.; R. Hammond, road foreman of engines, N. Y., N. H. & H.; C. H. Dillinger, air brake

supervisor, N. Y. C.; and H. W. Sefton, supervisor locomotive and fuel performance, C. C. C. & St. L.

Discussion

At the close of the reading of this report an extended discussion took place. One member questioned the need of automatic slack adjusters since if the piston travel is correct when a train leaves the terminal it will be the same at the end of the run save for a small fraction of an inch additional slack due to brake shoe wear. It was pointed out that after the first brake application the engineer feels the slack action of the train and must govern himself accordingly in future brake applications. In the main, the contention of the committee that most desirable brake action is secured when the slack is kept stretched and the brakes applied before the throttle is closed was upheld. H. H. Burns, Westinghouse Air Brake Company, agreed with a previous speaker in questioning the advisability of placing as much emphasis on piston travel as was done in the committee's report. While insisting that a constant effort should be made to improve the standard of air brake maintenance including recommended piston travel, Mr. Burns said that the improvement within the past year or two has been such that irregularities in brake action due to non-uniform piston travel are far less serious than those occasioned by the combination of loaded and empty cars in the same train with disproportionate braking power. Moreover, the drop in pressure at the end of a 100-car freight train, which may be as much as 15 lb., will occasion a greater variation in braking power between the front and rear cars of the train than would be caused by considerably more than the usual variation in piston travel.

Mr. Burns also commented strongly on the damage (often concealed) done by trying to spot locomotives for coal or water without uncoupling from heavy drag freights. He pointed out that while road foremen and sometimes two or three of their men may be able to do this successfully, by far the great majority of enginemen cannot spot a heavy tonnage train at a water standpipe or coaling station without unnecessary rough handling. The general conclusion was that no hard and fast rules can be adopted regarding this matter, which must be left more or less to the judgment of the engineman, depending on conditions. At the conclusion of the discussion the Association voted to adhere as closely as possible to the general rules laid down by the air brake companies for brake operation and in addition make brake applications with the slack stretched as recommended by the committee.

Election of Officers and Other Business

At the concluding session of convention, the following officers were elected for the year 1926: President, J. N. Clark, Southern Pacific; first vice-president, J. B. Hurley, general road foreman of engines and fuel supervisor, Wabash; second vice-president, J. D. Heyburn, master mechanic, St. Louis-San Francisco; third vice-president, James Fahey, traveling engineer, Nashville, Chattanooga & St. Louis; fourth vice-president, Ralph Hammond, traveling engineer, New York, New Haven & Hartford; fifth vice-president, A. N. Boyd, traveling engineer, Canadian National. David Meadows, Michigan Central, was re-elected treasurer of the association. W. O. Thompson, New York Central, is life secretary.

The by-laws of the association were amended to provide for an increase in size of the executive committee from 12 to 18 members, the following new members being elected: J. N. Nicholson, fuel engineer, Atchison, Topeka & Santa Fe; D. R. Sweeney, traveling engineer, Chicago, Burlington & Quincy; A. White, general road foreman of engines, Southern; M. A. Daly, general fuel supervisor, Northern Pacific; W. L. Robinson, superintendent of fuel and locomotive performance, Baltimore & Ohio; J. E. Bjorkholm, assistant superintendent of motive power, Chicago, Milwaukee & St. Paul, and D. I. Bergin, road foreman of engines, Wabash.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended September 12, which included the Labor Day holiday, amounted to 975,434 cars, a decrease of 86,347 cars as compared with the corresponding week of last year and of 85,129 cars as compared with 1923. In those years the Labor Day holiday occurred a week earlier. Because of the holiday the report shows decreases as compared with last year in all districts except the Southern, which showed an increase, and in all classes of commodities except coke and ore. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING, WEEK ENDED SEPTEMBER 12, 1925

Districts	1925	1924	1923
Eastern	209,516	240,850	232,389
Allegheny	190,218	210,857	219,293
Pocahontas	55,418	49,280	43,266
Southern	151,049	148,684	141,011
Northwestern	150,219	160,423	183,668
Central Western	150,433	176,097	168,017
Southwestern	68,581	75,590	72,919
Total Western	369,233	412,110	424,604
Commodities			
Grain and grain products	44,690	66,229	54,451
Live stock	28,687	38,794	39,000
Coal	157,357	182,800	171,877
Coke	10,975	8,291	13,480
Forest products	64,764	69,833	74,986
Ore	54,775	47,834	76,659
Mdse., l. c. l.	238,035	254,305	249,417
Miscellaneous	376,151	393,695	380,633
Total	975,434	1,061,781	1,060,563
September 5	1,102,946	921,303	928,916
August 29	1,124,436	1,020,809	1,092,150
August 22	1,080,107	982,760	1,069,915
August 15	1,064,793	953,408	1,039,938
Cumulative total 37 weeks	35,627,852	33,537,142	35,144,935

The freight car surplus continues to decrease and for the week ended September 7 averaged 146,998 cars, or 15,399 cars less than the average for the preceding week. This included 43,289 coal cars and 70,508 box cars.

For the same week the Canadian roads had a surplus of 26,615 cars, including 23,725 box cars.

Car Loading in Canada

Labor Day had an appreciable effect on the revenue car loadings in Canada during the week ended September 12, the decrease from the previous week being 1,948 cars and the total being 62,687 cars. Compared with the same week last year the increase was 7,148 cars.

	Total for Canada			Cumulative totals to date	
Commodities	Sept. 12, 1925	Sept. 5 1925	Sept. 13 1924	1925	1924
Grain and grain products	14,900	11,867	6,621	217,822	268,141
Live Stock	2,588	2,601	2,587	82,842	80,666
Coal	5,501	5,202	5,992	128,790	181,665
Coke	324	269	263	10,129	8,349
Lumber	3,508	4,037	3,639	130,812	132,991
Pulpwood	1,933	1,928	1,530	103,356	103,156
Pulp and paper	1,715	2,036	2,021	74,352	72,919
Other forest products	2,204	2,366	1,968	104,741	96,767
Ore	1,228	1,423	1,549	49,882	46,056
Merchandise l. c. l.	14,597	16,993	15,681	556,924	529,926
Miscellaneous	14,189	15,913	13,688	449,173	430,369
Total cars loaded	62,687	64,635	55,539	1,908,823	1,951,005
Total cars received from connections	29,762	34,467	27,684	1,215,161	1,162,760

Accident Investigations—January, February, March

THE Interstate Commerce Commission has issued its quarterly summary of accident investigations (No. 23) for the three months ending with March, 1925.*

This bulletin covers 31 accidents; 20 collisions, ten derailments and a fatal accident at a highway crossing. Nineteen of these accidents are abstracted below; all those affecting passenger trains and certain others, in connection with which there are circumstances of special interest. The complete list, as shown in the index of the official publication, is as follows:

ACCIDENTS INVESTIGATED, JANUARY, FEBRUARY AND MARCH, 1925.

1115	International-Great Northern	Palestine, Tex.	Jan. 4	D
1116	Yazoo & M. V.	Memphis, Tenn.	Jan. 4	D
1117	Michigan Central	Bakertown, Mich.	Jan. 6	C
1118	Southern	Columbia, S. C.	Jan. 8	C
1119	Pennsylvania	Keating, Pa.	Jan. 12	D
1120	Pacific Electric	Rialto, Calif.	Jan. 14	C
1121	Norfolk & Western	Peebles, Ohio.	Jan. 24	C
1122	Atlanta, B. & A.	Double Run, Ga.	Jan. 27	C
1123	Atlantic Coast Line	Florence, S. C.	Feb. 4	D
1124	Missouri Pacific	Nearman, Kans.	Feb. 7	D
1125	Chicago, R. I. & Pacific	Glenville, Minn.	Feb. 8	C
1126	Louisville & Nashville	Portland, Tenn.	Feb. 11	C
1127	Colorado & Southern	Forbes Junc'n, Col.	Feb. 13	C
1128	St. Louis-San Francisco	Kellyville, Okla.	Feb. 15	D
1129	New York Central	Watertown, N. Y.	Feb. 15	C
1130	Louisville & Nashville	Flat Lick, Ky.	Feb. 18	C
1131	Rockford & Interurban	Siding 5, Ill.	Feb. 22	C
1132	Wabash	Oakwood, Mich.	Feb. 23	C
1133	Louisville & Nashville	Grant, Ky.	Feb. 23	D
1134	Pennsylvania	Manhat'n Trans., N. J.	Feb. 24	C
1135	Maine Central	Gardiner, Me.	Feb. 27	C
1136	Southern	Greenville, S. C.	Feb. 28	C
1137	Southern	Helenwood, Tenn.	Mar. 3	D
1166	Baltimore & Ohio	Gaithersburg, Md.	Mar. 14	..
1138	Chesapeake & Ohio	South River, Va.	Mar. 15	D
1139	New York Central	S. Schenectady, N. Y.	Mar. 17	C
1140	N. Y., New Haven & H.	New Haven, Conn.	Mar. 19	C
1141	Chicago & Alton	Laddonia, Mo.	Mar. 20	D
1142	Pennsylvania	Canton, Ohio	Mar. 20	C
1143	Illinois Traction	Davis, Ill.	Mar. 20	C
1144	Southern Pacific	Ricohoc, La.	Mar. 22	C

Pennsylvania, Keating, Pa., January 12.—Westbound passenger train No. 571, consisting of a locomotive and seven cars, moving at about 40 miles an hour, on a curve of six deg., 30 min., was derailed and the locomotive and tender were overturned. The engineman and fireman were killed and four passengers and one employee were injured. The inspector could not determine the cause of this derailment, but there was testimony indicating that something was wrong with the forward truck of the baggage car. Baggageman Steltzer, who had left this train at Renovo is quoted as having said that the car "rode hard"; that he had refused to receive express matter at Williamsport, because the front end of the car was loaded to capacity, and that he had ridden most of the distance from Harrisburg in the coach immediately behind the baggage car. The baggage car was the only wooden car in the train, and it appears that the greater safety in a steel car was one reason (or the only reason) why Steltzer did not ride in the baggage car.

Pacific Electric, Rialto, Cal., January 14.—5 a. m.—The rear part of an eastbound freight train, standing on the main track while the trainmen, with the engine, had gone off a short distance on a branch, was run into at the rear by an express train, consisting of one electric car; and the motorman of the express was killed. Two other persons were injured. Smudge pots, burning in orchards adjacent to the tracks, had caused a dense smoke, making it impossible to see more than a few yards; and the primary cause of the collision was the failure of the motorman of the express train to have his train under control, according to the rule for trains approaching Rialto. A contributing factor was the issuance of a train order allowing the freight to occupy the main track without sending out a flagman. The conductor of the express train was riding with the motorman and he is held also at fault. The conductor of the freight is held blameworthy for not placing the rear part of his train on a side track or sending back a flagman. It appears that the issuance of train orders to obviate the necessity of sending out a flagman has been customary for several years, which practice is severely condemned by the inspector.

Norfolk & Western, Peebles, Ohio, January 24, 2:42 a. m.—Collision between eastbound freight No. 86, first section, and westbound extra 389, making a bad wreck. A fireman and a brakeman of the eastbound train were killed and two other employees were injured. The eastbound train had run about two miles beyond the point at which it should have waited for the westbound, because the men on 86, seeing westbound extra 1067 on the side track, assumed it to be 389. The report details the statements of all the men involved, but the simple conclusion appears to be that none of the men on 86 was careful to see that the train on the side track was identified with certainty. The two enginemen of the locomotives of 86, and the conductor, are held principally at fault. Many of the statements are contradictory and confusing. The opening paragraph of the report says that a manual block system is in use, but it appears that orders from the dispatcher, saying that a block is clear with certain exceptions, are employed in lieu of actual block signals.

Atlanta, Birmingham & Atlantic, Double Run, Ga., January 27.—Eastbound freight, extra 108, moving at about 12 miles an hour, ran 10 miles beyond Musselwhite, where it should have waited for westbound passenger train No. 1, and collided with the passenger, which was moving at about 18 miles an hour, badly damaging the engines and wrecking three cars. An express messenger was killed and 10 passengers and three employees were injured. The freight had order No. 42 giving 40 minutes' time on No. 1; and later the dispatcher issued order No. 44 taking this time away from the freight; but this last order did not reach the freight conductor; and though it was delivered to the engineman, he apparently failed to read it correctly.

The engineman denied receiving the order, but the inspector, from various testimony, believes that he received it and read that portion making a meet with a westbound freight, but overlooked that portion of it which annulled his right against No. 1. The report recounts much irregular practice, and contradictory testimony. Order No. 44 was received at Cordele after the delivery of No. 42; and the operator went to the train, which had passed beyond his office, and delivered the order to the engineman. Later the conductor learned that such an order had been received but he did not require the engineman to show him a copy. The operator neglected to correct the clearance card or to issue a new one. The order changed the point of meeting with extra 123; and the engineman of 108 met that train at Musselwhite where, according to his orders, it had no right to be, and yet made no inquiry. The fireman and two brake-

* Previous quarterlies noticed in the *Railway Age* as follows:

No. 22	Aug. 15, 1925, p. 322		No. 19	July 19, 1924, p.	104
No. 21	Mar. 21, 1925, p. 799		No. 18	July 5, 1924, p.	11
No. 20	Oct. 25, 1924, p. 759		No. 17	July 5, 1924, p.	11

men had some knowledge of the various orders but had not seen them, and apparently trusted to the conductor or the engineman, or both. The inspector says that the officers of this railway "should take energetic measures toward enforcing strict obedience to the rules."

Atlantic Coast-Line, Florence, S. C., February 4.—Northbound passenger train No. 86 consisting of locomotive No. 1545 and 15 cars, was derailed at a double-slip switch in Florence yard, while moving at about 25 miles an hour; and the fireman was killed. One other employee was injured. This derailment was due to excessive speed, which resulted from the inability of the engineman to apply the brakes; and this in turn was due to the cut-out cock under the brake valve on the locomotive being partly closed. It appears that the bar for shaking the grate, when moved to its extreme forward position, could come in contact with the handle of the cut-out cock; and it is believed that this was what happened when the firemen had shaken the grates at a point 10 miles south of Florence. It was found that there were other locomotives on which this condition existed, but no person had realized the danger. It is said, however, that it came out that the same thing had happened on another engine the day before.

Missouri Pacific, Nearman, Kan., February 7.—Eastbound passenger train No. 104 derailed by the breaking of a spring-hanger bolt in a truck of the locomotive; six persons killed, 30 injured. This accident was reported in the *Railway Age* of June 13, page 1487.

Chicago, R. I. & P., Glenville, Minn., February 8.—Collision between a westbound freight train of the Rock Island with an eastbound passenger train of the Minneapolis & St. Louis, resulting in the injury of one passenger, two mail clerks, and three trainmen. The collision occurred at 3:10 a. m. when there was a dense fog and was due to the failure of the engineman of the freight to wait at the Glenville station according to a train order which he had received. This collision was reported in the *Railway Age* of August 1, page 242.

Rockford & Interurban, Siding 5, Ill., February 22.—A westbound electric car (train No. 7) collided with an eastbound car (train No. 10) badly damaging both cars and causing the death of one employee; 11 passengers and three employees injured. The report says that possibly also one passenger was killed and the body burnt up in the wreckage, which took fire apparently from a short circuit. Number 7 had run past a time-table meeting point. The conductor said that he had been engaged in collecting fares, while the motorman had no explanation to offer. The inspector finds no shadow of excuse for either man.

Louisville & Nashville, Grant, Ky., February 23.—Southbound passenger train No. 33, second section, moving at about 40 miles an hour, was derailed on a curve of 10 deg., and the locomotive and tender were overturned and thrown at right angles to the track. The engineman and fireman were killed. The inspector believes that this derailment was due to excessive speed, a careful examination of the locomotive, cars and track disclosing no defect that could have caused the derailment. The engineman had been a freight runner about four years.

Pennsylvania, Manhattan Transfer, N. J., February 24.—Rear collision of passenger trains, killing three persons and injuring 59; caused by failure of air brakes due to closed angle cock; cause of this condition not discovered. This collision was reported in the *Railway Age* of February 28 and May 16.

Maine Central, Gardiner, Me., February 27.—A westbound freight ran into the rear of a preceding freight which was standing within yard limits, and four caretakers in charge of cars of potatoes, who were in the caboose of the standing train, were killed. The engineman is held at fault for passing two automatic signals, cautionary and stop, set against him, and also for running within yard limits not under full control.

Southern, Helenwood, Tenn., March 3.—Northbound passenger train No. 6, moving on a side track about 10 miles an hour, at about 1 a. m., was thrown off the track by a Hayes derail and the locomotive was overturned and the engineman and fireman were killed. The men in charge of a freight train, which had been using the side track, had had occasion to use the derail and the inspector thinks that a brakeman, who set the switch for the passenger train, neglected to take the derail off the track; but there was some suspicion that after (as he claimed) he opened it, (as he intended) and, within an interval of about 15 minutes, some unknown person closed it. Up to the time that the government investigation was made the police department of the railroad had not apprehended any person. The derail has no target and it is not connected with the main track switch. The lack of this connection is the only point criticized by the inspector.

Baltimore & Ohio, Gaithersburg, Md., March 14.—This was not a train accident; it was a case of an automobile being wrecked at a crossing, its two occupants being killed. The case was investigated at the request of friends of the victims. Complaint was made that in addition to fixed red light signals the railroad employed a watchman at the crossing who swung a green lantern; and the theory was advanced that green would be taken as a signal to proceed, because of the use of this color in city streets to give that indication. The inspector found that the watchman, in the daytime, using a disk, added somewhat to the protection of the crossing but at night, with the green light, added little or nothing; "quite possibly his presence detracts from the protection afforded by the automatic signals." This report was noticed in the *Railway Age* of August 8, page 272.

Chesapeake & Ohio, South River, Va., March 15.—Westbound passenger train No. 205, moving at about 10 miles an hour, on a curve of 14 deg., was derailed, and the locomotive was overturned. The engineman was killed and one other employee was injured. The superelevation of the curve was not uniform, varying about 3 in. in a distance of 150 ft. The inspector finds the irregular alinement and superelevation to have been the cause of the derailment of the locomotive. This locomotive was class G-9, of the 2-8-0 type. It is spoken of as "heavy" but its weight is not stated.

New York Central, South Schenectady, N. Y., March 17, 8 a. m.—Rear collision of freight trains on a 5-mile line connecting different parts of New York Central main lines, causing the death of one flagman and the injury of five employees. The wreck was partly destroyed by fire. The line is worked by the manual block system, freight trains being regularly allowed to follow other freight trains on permissive signals; the collision was due primarily to the fault of the signalman at Signal Station 7, in giving a clear signal to train ZV-2 when his record showed that a preceding train had not cleared the block. This signalman had just come on duty and had failed to look at the transfer slip delivered to him by the night signalman. He saw that the train entered on the second line of the block sheet had cleared, overlooking the fact that the train on the first line had not cleared. The engineman was also at fault for not running under control within yard limits and the flagman (who was killed) had neglected to go back with stop signals. He was killed in the caboose. The locomotive of train ZV-2 was moving backward, and the fireman (who had the best view) is held at fault for not promptly advising the

engineman when the preceding train, which was at rest, came into view. The fireman said that he could not tell whether or not the standing train was on the main track.

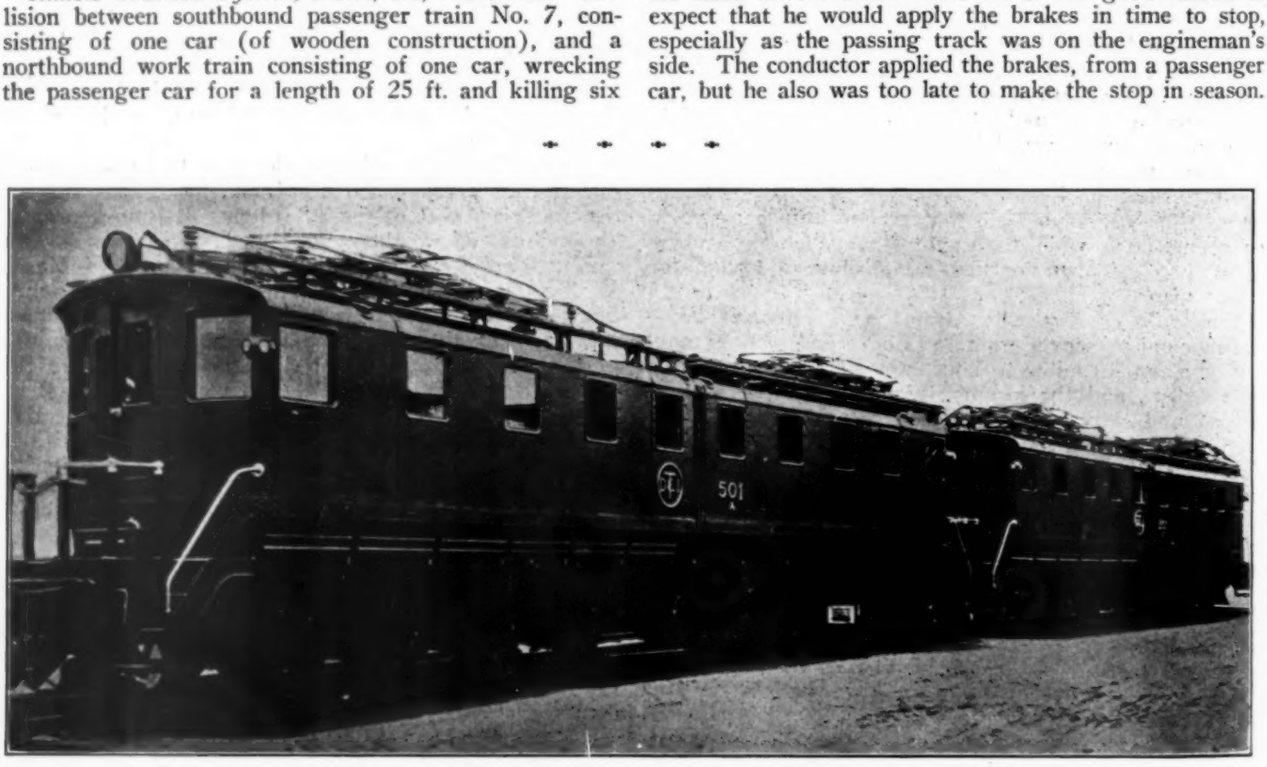
The inspector makes the stereotyped comment that "had an adequate block signal system been in use, this accident probably would not have occurred."

New York, New Haven & Hartford, New Haven, Conn., March 19.—Rear collision of eastbound freight trains, about 2:30 a. m. Extra 0110, with 57 cars, moving at about 25 miles an hour, ran into the rear of a preceding freight train which had been stopped, within yard limits. A caboose and eight cars were wrecked and a part of the wreck was destroyed by fire. The engineman and fireman of Extra 0110 were killed. As both engineman and fireman were killed, the inspector can find no explanation of their failure to apply brakes; they had passed not only automatic signals set against them but also had exploded a torpedo and they paid no attention to the flagman of the standing train. The flagman is severely censured for the lax method in which he performed his duty. He had ten minutes in which to protect his train but went back only a very short distance. Both of these trains, drawn by electric motors, had run from Harlem River, N. Y., 78 miles, without stopping. The conductor and other witnesses had talked with the engineman before beginning the trip, about 12:15 a. m., and saw nothing abnormal in his appearance. The report says nothing about the whereabouts or the condition of the engineman prior to 12:15 o'clock.

Chicago & Alton, Laddonia, Mo., March 20.—Eastbound passenger train No. 24, moving at about 50 miles an hour, was derailed, about 2 a. m., by a broken rail, and the locomotive was overturned. The fireman was killed and 13 passengers and one employee were injured. The inspector finds that the rail had failed because of a transverse fissure about one inch wide and ¾ in. deep. This fissure had not reached the surface of the rail and could not have been detected by the track inspector.

Illinois Traction System, Davis, Ill., March 20.—Collision between southbound passenger train No. 7, consisting of one car (of wooden construction), and a northbound work train consisting of one car, wrecking the passenger car for a length of 25 ft. and killing six passengers and the motorman. The passenger train had been brought to a stop but the work train was moving at 25 miles an hour or faster. The conductor and the motorman of the work train had encroached on the time of the passenger train, both men having overlooked that train on the time table. Train No. 7 is due at Davis at 12:44 p. m. but was 20 minutes late. These men, examining the time-table at about 1 o'clock apparently forgot that No. 7 had not passed, and they fixed their attention on the next train, which was due at 1:49. The line is equipped with automatic block signals but these were not in working order. "If they had been in use the collision probably would not have occurred," says the report.

Southern Pacific, Ricohoc, La., March 22, 3 a. m.—Collision in a dense fog between westbound passenger train No. 109 and eastbound passenger train No. 12, resulting in the death of six passengers, five employees and two other persons, and the injury of three passengers, six employees and four other persons. Train No. 109 was moving from 20 to 35 miles an hour. No. 12, which had overrun its appointed meeting place, had nearly come to a stop. The employees (on duty) killed were the engineman of No. 109 and the porter of No. 12. Four pages of the report are taken up with an abstract of the testimony, but the sum of the evidence is that the engineman of No. 12 "lost his bearings" or was oblivious to well-known landmarks, and failed to stop at Ricohoc; though he had sounded the whistle properly on approaching the station, to indicate that he understood that another train was to be met there. He passed an automatic block signal, set against him, at the east end of the passing track, and the collision occurred within a short distance beyond that signal. The inspector finds it "difficult to understand" how an engineman of his experience could have become so confused, even in a fog. The fireman is censured for not having taken decisive action when he saw that the engineman was not slackening at the proper time; the fireman explained that as the engineman had his hand on the brake valve there was good reason to expect that he would apply the brakes in time to stop, especially as the passing track was on the engineman's side. The conductor applied the brakes, from a passenger car, but he also was too late to make the stop in season.



P. & A.

New D. T. & I. Electric Freight Locomotive

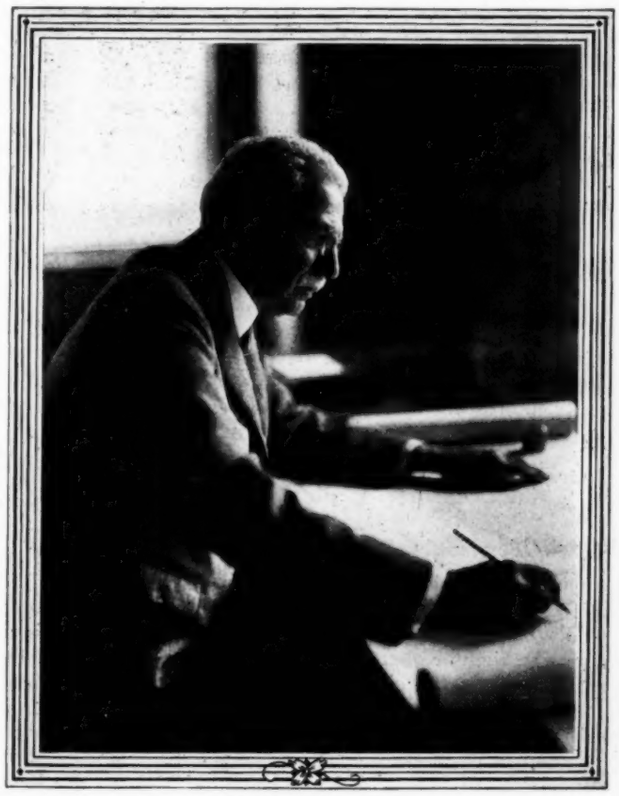
Samuel Rea Retires as P. R. R. Head

Became 70 years of age on September 21—Associated with property 54 years with 33 years' continuous service

SAMUEL REA, president of the Pennsylvania Railroad Company, having reached the age of 70 on Monday, September 21, will on October 1 retire from active service in accordance with the pension rules of the company. At the time this is written the name of his successor has not yet been announced, although it is expected that W. W. Atterbury, who was recently elected senior vice-president and a stockholders' director, will be named.

Mr. Rea has been president of the Pennsylvania since January 1, 1913, and has, therefore, piloted the property through a series of eventful years characterized by the vicissitudes resulting from the federal control period and in which there have arisen for solution the problems of recovery after the return of the railroads to private control, the problems of the restoration of employee morale and the problems of so guiding the activity of the country's largest railway system as to meet the new requirements set forth in the Transportation Act.

Mr. Rea was first employed by the Pennsylvania in 1871 but left in 1873 because of the financial panic of that year. He was again in its employ from 1875 to 1877 and from 1879 to 1889 but his continuous employment dates from 1892, in which year he was made assistant to President Roberts. Thus, his association with the Pennsylvania System has covered a period of 54 years, the latter 33 years of which have been continuous.



Samuel Rea

Mr. Rea, when he became president on January 1, 1913, already had a remarkable record of accomplishment. Most noteworthy in this respect was his responsibility in connection with the planning and construction of the Pennsylvania tunnels under the North and East rivers at New York, which gave the system its all-rail connection to Manhattan. In 1892, Mr. Rea had been assigned to make a study of the railway terminal and underground systems of London, and later he made a similar investigation of the underground lines in Paris. When the plans for the tunnels were prepared, he was made supervisor of their construction. In 1910, he was given the degree of Doctor of Science by the University of Pennsylvania in recognition of his work. Mr. McCrea, then president, having pointed out that he was the officer of the railroad chiefly responsible. As Mr. McCrea phrased it, "Rea is entitled to the degree. If the project proves to be a failure, he must take the responsibility, and if a success, he is entitled to the credit."

Mr. Rea was, however, more than an engineer alone, as if what he had done in that profession were not enough to demand merited recognition. For a time he had been a partner in the investment house of Rea Brothers & Co., of Pittsburgh, and was in fact a member of the New York Stock Exchange for a period of 12 years. This was probably one of the reasons why, prior to his being elected president of the Pennsylvania, he was vice-president in charge of both the engineering and accounting departments. Because of his position he was called upon to play an active part in the period of railroad consolidation from 1900 to 1907, in which the Pennsylvania joined with other railroads in what was known as the "Community of Interest Plan" and bought a substantial interest in the Baltimore & Ohio, The Chesapeake & Ohio, and the Norfolk & Western. Mr. Rea supervised and was responsible for these purchases, and served for many years as a director of the various companies. In addition, in close contact with Jacob H. Schiff, he took charge of the acquisition of 43 per cent of the Reading Company stock, which was subsequently divided equally between the Lake Shore & Michigan Southern (now the New York Central) and the Baltimore & Ohio, as the laws of Pennsyluvania prohibited its acquisition by the Pennsylvania System. Subsequently, when the "Community of Interest Plan" was disapproved by the public, the Pennsylvania disposed of its interest in the Baltimore & Ohio and the Chesapeake & Ohio, and Mr. Rea resigned from their boards. He is still, however, a director of the Norfolk & Western.

Not a College Man

The Pennsylvania was not the only road to acknowledge Mr. Rea's capabilities. In 1899, he was offered the presidency of the Southern Pacific by Speyer Brothers and Collis P. Huntington. In 1903, he was offered the presidency of the New York, New Haven & Hartford by J. P. Morgan. When the famous battle for control between J. J. Hill and J. P. Morgan on the one side and E. H. Harriman on the other for control of the Northern Pacific resulted in a compromise, Mr. Rea served as one of the "peace directors" on the Northern Pacific board. During

the war he was a member of the Railroads War Board.

Samuel Rea was born at Hollidaysburg, Pa., in 1855. His father's death when the young man was 13 years of age made it necessary for him to go to work. He entered railway service three years later, securing from James McCrea, later president of the Pennsylvania and his predecessor in that position, a job as chainman and rodman. After two years in such employment on the Morrison's Cove, Williamsburg and Bloomfield branches of the Pennsylvania, he lost his job in the retrenchments accompanying the panic of 1873. He then worked for a while as a clerk in the office of the Hollidaysburg Iron & Steel Company. In 1875, he re-entered the service of the Pennsylvania in the engineering corps, and was for two years assistant engineer in charge of the construction of the chain suspension bridge over the Monongahela river at Pittsburgh, Pa. At one time, when engineering work slackened, he obtained a job as cashier and later as ticket agent of the Pittsburgh & Lake Erie, and was for a while assistant engineer of that road. In 1879, he again returned to the Pennsylvania and was assistant engineer in charge of the construction of its line then known as the Pittsburgh, Virginia & Charleston. From 1879 to 1883, he was engineer in charge of surveys in Westmoreland County, Pa., and the revising and rebuilding of the Western Pennsylvania. From 1883 to 1888, he was principal assistant engineer of the Pennsylvania and from 1888 to 1889 assistant to the second vice-president. When promotion seemed slow in 1889, he resigned to go to Baltimore as vice-president of the Maryland Central and chief engineer of the Baltimore Belt. He located the latter, put it under construction, and it is now part of the Baltimore & Ohio. From April, 1891, to May 25, 1892, Mr. Rea was out of railway service as a result of ill health. It is noteworthy that Mr. Rea did not have the advantages of a college education. It is equally interesting that some of his early career was spent in the employ of the two leading competitors of the system which he was later to be the head, namely, the New York Central Lines and the Baltimore & Ohio.

Studies London and Paris Terminals

On May 5, 1892, Mr. Rea returned again to the employ of the Pennsylvania Railroad, this time as assistant to the president. On the very day of his employment, he left for London where, by direction of President Roberts, he made a study of the railways terminating in the city and of the underground lines then in operation or proposed. This study was prepared under the name "Railways Terminating in London." A similar investigation was later made by Mr. Rea of the underground extension of the Orleans Railway in Paris. Later, in 1892, Mr. Rea was assigned to general construction work then in progress, the acquisition of right-of-way and real estate in that connection, the promotion of all new lines and branches and the financial and corporate work incident thereto.

On February 10, 1897, Mr. Rea's title was changed to first assistant to president. On June 14, 1899, he was elected fourth vice-president of the System, Lines East of Pittsburgh and Erie, following the election of Mr. Cassatt as president. On October 10, 1895, he was advanced to third vice-president, and on March 24, 1909, to second vice-president, at which time, in addition to his former duties, he was placed in charge of the engineering and accounting departments. He was elected first vice-president on March 3, 1911, and from May 8, 1912, until his election to the presidency on January 1, 1913, he was vice-president in charge of the New York tunnel and terminal improvements.

It is said that the project of the Pennsylvania to secure an all-rail connection into New York City had been under consideration since as early as 1871. In 1884, Mr. Rea presented to Mr. Roberts, then president of the railroad, the proposition of Gustav Lindenthal, the noted bridge engineer, for the construction of a bridge across the Hudson between Jersey City and Desbrosses Street, New York. Plans for the bridge were temporarily discarded due to the cost of such a structure—twice that of the Brooklyn bridge. Lindenthal, Rea, and their associates continued with the project, however, with the idea that the federal government should charter a company for the purpose. In 1890, the charter was granted; of the six incorporators of the North River Bridge Company, only Messrs. Lindenthal, Thomas Ryan, and Rea survive. The Pennsylvania agreed to join with other roads in guaranteeing sufficient traffic to the North River Bridge Company to make the project self-sustaining. Upon the failure of the other roads to join in this guarantee, the bridge plan again lapsed and the Pennsylvania went ahead with its tunnel plans. Speaking of the present situation in regard to the bridge, Mr. Rea has recently said: "It will be built, of course, but only when an awakened public is overwhelmed with inconvenience, and housing costs in the city are prohibitive. No system of tunnels can ever do as much for New York as a bridge properly located."

Mr. Rea was also closely interested in the rapid transit tunnels built by the Hudson & Manhattan between New York, Jersey City, and Newark. Believing that ferry transportation was becoming obsolete for New York and not wishing to keep both an uptown and downtown station active, the Pennsylvania Railroad, largely through Mr. Rea's influence, permitted the Hudson & Manhattan Company to construct underneath its station in Jersey City and to use its tracks in the open between there and Newark.

Mr. Rea's work has of necessity brought him into personal contact with the leaders in business of the past half century. It is stated that, recognizing the value of such intercourse, he maintained a constant acquaintanceship with English engineers and economists, like the late Sir William Acworth, one of the greatest of England's railroad authorities, and Sir George Paish. The late Jacob H. Schiff, former head of Kuhn, Loeb & Co., was one of his intimate friends; and J. P. Morgan, E. H. Harriman, J. J. Hill, and many other railroad notables of that period were in the circle of his acquaintances.

He did not, however, confine his contacts to those whom he would have met in the natural course of his work. On one occasion he said to a friend: "I am fond of motoring or travel as a quick means of acquiring knowledge of one's state and the country and its resources, and getting into close contact with the business men, the farmers and the public. He will prove to be a poor railroad man if he does not learn a great deal about the public he is called to serve." This same desire for knowledge of humankind found expression in his love of books, supplying the background of culture, vision and balance of life which he deemed necessary for the young business man. He is known among his friends as an extensive and cultivated reader in history, biography, travel and economics.

When his retirement takes effect on October 1, Mr. Rea will return to his farm, where most of his free time in the last few years has been spent. He has been interested, on the side, in the study of old English silver craftsmanship and its distinctive hall-marks, of which there is a record for about 600 years.

Mr. Rea in a recent interview gave his views on various situations affecting the railroads. They are of interest in themselves, and also as giving one an insight into the attitude of the Pennsylvania's retiring president towards the problems of the day.

Speaking generally, Mr. Rea expressed the opinion that

the opportunities for young men to succeed in railroading are better today than ever; that a higher class of mental and physical equipment for leadership are required than 50 years ago; that while the development of railroading might not be in opening up new territory, especially in the East, the necessity for new and better methods are more urgent than ever. Revenues must be increased, expenses reduced, and waste eliminated. No branch of the service could be freed from the necessity of invention and progress of that character. Successful railroad management could not be achieved except through incessant devotion and a clear understanding that leadership is required on the one hand, and ability to earn profits on the other. In the welter of discussion and the flood of ideas, good and bad, and the political and economic obstacles that arise, managers must see that the payroll is earned for the employees, the taxes for the government—federal, state and municipal—and a fair return paid to the owners.

In amplification of some of these points Mr. Rea said:

"I have known most of the railroad executives of the country, and it is a great pleasure to me to commend them to the confidence of the public because of their splendid work in the public service in adding to the prosperity of the country, in being able to give not merely the greatest but the most efficient railroad service at present and for conserving the railroad investment on small profits and under the most exceptional difficulties for almost two decades.

Automotive Vehicle Competition

"While I have lived to see turnpikes, canals and trolleys dispensed with, and the 'pikes' resuscitated as parts of great national highway systems, nothing has occurred in the development of good highways, motors, or air service to prevent the main lines of railroads from being one of the cheapest and practical methods of transportation for the future, and while the eastern railroads may be restricted in their future expansion, yet such a tremendous amount of work must be done in the enlargement of their terminals, increase of tracks and betterment of their service and facilities, and the cheapening of transportation, it will require the best skill and administration of the railroad officers and managements.

"I believe that while motors will carry some railroad traffic for a time, the inevitable result will be that they will fall into the places where they are most needed, and will develop more freight and passenger traffic for the railroads than they took away. Excluding the railroads, there is no motor service or roads capable of dealing with the transportation situation on the wholesale plan required by the people, especially for bulk freight in volume.

"I regard as the greatest need of the railroads the necessity for giving the railroads and their owners a fair return upon the property, relief from excessive taxation, and freedom to conduct their affairs without excessive legislation or regulation that encroaches or interferes with responsible management. Without these essentials the railroad men cannot do their best work, and the nation will not continue to have what it has had in the past—the cheapest and most convenient and effective methods of transportation compared with any country in the world.

Consolidation

"I have spent a great part of my life in carrying out consolidations and mergers and it is possible to make consolidations and mergers which are mistakes, and often fail to give additional traffic to the acquiring or merging corporations, unless they serve the public in the way that business requires, and have for their object the prosperity of the communities they reach.

"I expect to see, under enlightened regulation, the greatest freedom to carry out future consolidations, and anything which would take the place of voluntary consolidations might later prove very harmful. I am not very much impressed with the desirability of forcing the Interstate Commerce Commission to approve maps that for all time would allocate companies for future consolidations into systems. So much has already been done by every large system with consolidations and mergers that serious mistakes might be made and unwise consolidations be the result if the voluntary procedure is not permitted.

"Consolidations are not the result of intuition or theory, and are justifiable only when they respond to the laws of supply and demand, and for the elimination of waste or facilitating transportation; many consolidation factors involving taxation, valuation and other serious questions have not as yet had the consideration they require.

Responsibility of Management

"In all business questions affecting railroads I feel sure that the best satisfaction would be given to both railroad owners and the public, if the process of interfering with the responsibility and judgment of managements should be halted and public regulation used as an impartial medium for adjusting or avoiding difficulties between railroad users, railroad owners and the managers, with the view of providing service without discrimination and at the lowest compensatory rates, and that full publicity be given to railroad financing and operating results. I am a firm believer in the principle of competition which aroused the best efforts of railroad men, and also of continuing the present ownership of our railroads and other public utilities by the citizens and their institutions, instead of by the government, because the present plan is superior, I feel, to any method of government ownership in the world.

The Danger of Politics

"The citizens themselves are directly concerned in the welfare of the properties in which they are owners, and the process of putting all responsibilities on the government instead of allowing the roads adequate returns has been one of the chief causes of financial embarrassment to other nations, and we ought to avoid it. The danger of politicalizing railroad men and railroad service and improvements is far too great to be lightly undertaken, especially as it does not promise better or cheaper service.

Future of the Pennsylvania System

"The available facts show that the Pennsylvania Railroad System has kept pace with the growth of the country and successfully met periods of expansion and depression; it has surmounted the crest of long-continued depressing legislation and regulation, and the far-reaching consequences of a world war; it has survived the continuous struggle to prevent confiscation of the railroad investment; it has helped in bringing about a fully informed public opinion, and a closer understanding of the necessity for strong railroads with ample net returns; it has always been conservatively managed, has experience and traditions of inestimable value, and is considerably undercapitalized, and is one of the effective instruments of national prosperity. The system represents an investment of 2½ billion dollars. It performs one-eighth of the transportation service of the country. It cannot stand still, and so long as the country grows, it must grow.

"It is also true that we have had to stand the effects of the war and strikes, both within and without our own service. All of these have been surmounted, and the company has again, I am happy to say, reached a solid foundation and an assured earning capacity on which, by continued vigilant and constructive management, the system

will, under anything like normal conditions, retain a commanding position to earn good returns.

"I am likewise satisfied that we will have the active co-operative working of all officers and employees to that end. The management recognizes that it will at all times need the continuing support and strength of public opinion, fair legislation and regulation. I am sure that its management will command the continued confidence of its 150,000 stockholders.

Labor Policy

"It has always been the policy of the company to make its service as attractive as possible to the officers and men from the standpoint of promotion, pay and steady work under fair conditions. We have never erected a Chinese wall in dealing with opportunities for promotion or in formulating wages and working conditions.

"The Pennsylvania has pursued an open-door, co-operative policy in dealing with its labor questions.

"The results of 50 years have produced few interruptions and much co-operation and loyalty, and the results since the war have brought us into the further advanced field of employee representation and reviewing boards to see that our human relations are sympathetic and just.

"These policies, I am happy to say, have produced uninterrupted service for the public and splendid confidence and co-operation between men and management. 'Steady work and pay, and pride in the property,' is the slogan of Pennsylvania's men, and many of them, as I have pointed out, are owners of the property, and are thereby working for themselves as well as for the company.

"I recall with pride that one of the first investments I made was in its stock, and in the periods of distrust or low earnings I always increased my holdings while many others reduced them. The company will have no difficulty in filling my place with a man equally trained and tested, who will measure up to his predecessors in the assumption of the vast responsibility that will be placed upon his shoulders, and who will be loyally supported by the board of directors and officers in getting the best results in the public service and for the company's stockholders.

"With this foundation, I therefore suggested to the stockholders at the last annual meeting what I know is the unwritten motto of the directors, officers and working forces of the Pennsylvania Railroad: 'Look ahead and go foward.'

"Let others theorize, criticize and be indifferent or even destructive, these faithful sons and daughters of the nation will work hard, think hard, and if need be fight hard, to keep the nation true to its best ideals and preserve the freedom and opportunities that have been acquired at such great cost.

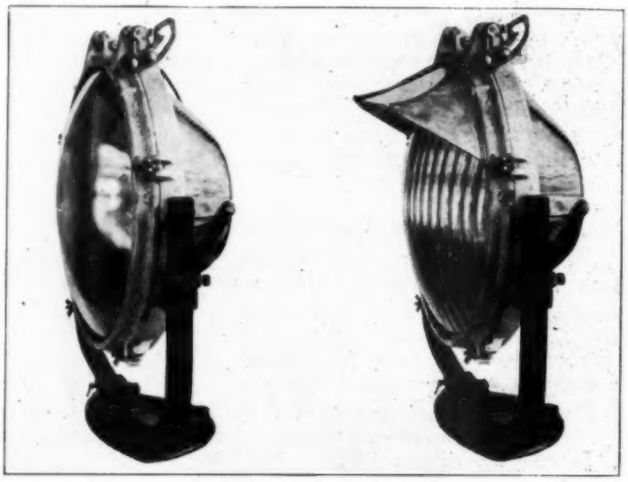
Philosophy of Life

"In the underlying influences which actuated my career in meeting various difficult situations in carrying on the day's work, I would put in the first rank a high sense of duty to the task intrusted to a man, and realize that a man usually gets the deepest satisfaction from service and sacrifice and hard knocks. The business man must never neglect the books which bring us close to great minds, and especially biography and travel, which give us an insight into the the lives of successful men and heighten the imagination and increase knowledge of other countries. If neglected by the young business man, he will find himself lacking in culture, vision and balance of life. His sympathies will be narrow and selfish. He must stand for the best things in life and use his service, influence and money to advance them. The world gets nowhere with stand-patters or indifferent people."

New Floodlight Eliminates Ventilation Difficulties

THE importance of adequate floodlighting of railroad yards and terminals is becoming generally recognized because of the greater safety afforded to employees and the improvement effected in night work and property protection. However, to secure proper illumination efficiency from floodlighting projectors it is essential that the reflectors be kept clean, a difficult and expensive maintenance item with ventilated projectors.

As a departure from conventional floodlight projector design, the new Type No. 2375 projector recently introduced by the Pyle-National Co., Chicago, dispenses entirely with the necessity of ventilation for cooling purposes. The provision of sufficient radiating surface insures safe interior temperatures for the glass reflector and lamp when using 1,000 and 1,500-watt lamps. Machined



Left—Projector with 23-in. Plain Cover Glass Right—Same Type Equipped with 23-in Rectangular Divergence Lens and a Visor

surfaces at the door joint and a soft lead packing ring are noteworthy features which exclude effectively dust, moisture, gas and insects from within the case. To prevent corrosion from locomotive gases as well as the ordinary elements, the case of the projector is of cast aluminum alloy, with a drawn aluminum back, while the fittings and other small parts are of either aluminum or bronze. Focusing adjustments are made from the outside of the case, the provision of locking devices on the mounting base and trunnions preventing any accidental change in adjustment by the maintainer. The reflector, which is 23 in. in diameter, can be furnished in either the "Non-glare" or crystal glass type, while the lens may be plain or of the rectangular divergence type if a wide angle of light dispersion is desired. A visor with an enamelled reflecting surface, as shown in one of the views, can be furnished for cases where the projector is mounted on a high pole and operating conditions require light close to the pole.

AT MITCHELL FIELD, Long Island (New York City), on September 18, Lieutenant Alvord J. Williams, flying in a navy airplane, traversed a distance of one kilometer at the rate of 302 miles an hour, or more than five miles in one minute. The plane which was used has a breadth from tip to tip of wings of only 22 ft. The aviator had a sloping windshield to protect his face.

Roadmasters Discuss Problems at Kansas City

Reports presented at forty-third annual convention cover diversified field in interesting manner

TWO features of the convention of the Roadmasters' and Maintenance of Way Association, which was held this week at Kansas City, stand out with particular prominence and to them must be ascribed very largely the increased strength and prestige which this organization has gained. One is the finished character of the reports presented by the various standing committees. The other is the part which higher railway officers had in the program. Almost without exception the committee reports evidence a diligent search for information and a careful study of the material compiled. Expressions of opinion were supported, in nearly all cases, by data.

Of equal value on the program were addresses and papers by railway executives, some of them of an inspirational character and others dealing directly with pertinent problems of the track maintenance officer's routine duties. A. N. Reece, chief engineer, Kansas City Southern, presented a paper on the treatment of soft roadbed and Colonel F. W. Green, vice-president of the St. Louis Southwestern, defined his views on the requisites for a successful maintenance of way officer in a paper entitled "Raising the Standard of Maintenance Forces" during the session on Tuesday afternoon; while L. W. Baldwin, president of the Missouri Pacific, presented an address on Wednesday morning. A special evening session on Tuesday was devoted to an address on the history of railroading by Colonel F. G. Jonah, chief engineer of the St. Louis-San Francisco. The principal feature of the annual dinner presented to the roadmasters by the Track Supply Association on Wednesday evening was an address by W. B. Storey, president of the Atchison, Topeka & Santa Fe. The convention was held in the Kansas City municipal convention hall where ample space was available for the various sessions of the convention, as well as for a large exhibit of track materials and equipment under the auspices of the Track Supply Association. Approximately 300 members and guests were in attendance.

C. E. Johnston Welcomes Roadmasters

The convention was opened at 10 a. m. on Tuesday morning with an address of welcome by C. E. Johnston, vice-president and general manager of the Kansas City Southern. He also offered some specific suggestions for subjects to be considered by the association. His remarks were in part as follows:

You represent the roadway and maintenance department of American railroads. Your department deals with the very foundation of the railroad. If a railroad has bad track, it is not possible for it to render satisfactory service to the public. It has occurred to me many times that a roadmaster is a fortunate individual. There is inspiration in his particular field of endeavor; there is no limit to his value as a "doer." We all appreciate that rail is perhaps the most expensive of our track structure. There is an urgent demand upon us as maintenance experts to reduce this very heavy cost. May I suggest serious consideration to the following:

(a) More consideration should be given to the economical limit of wear on the rail before removal. I have thought many times of the very great waste in removing rail not sufficiently worn to justify the heavy cost of replacement.
(b) What is the economical length of rail, and still stay within the limit required to provide for expansion and contraction, in order to provide a minimum number of joints? We all know joints are expensive.
(c) Are we using the proper section of rail to meet the requirements?
(d) Are we paying enough attention in the field or on the ground to specifications and inspection of rail?
(e) The maintenance of rail joints is a very heavy item.
(f) Do we regard sufficiently the proper allowance for expansion in rail?
(g) This brings us to the item of rail anchors, a very important consideration.
(h) What value lies in the proper cant of rail, and how is the best way to bring this about?
(i) Have you had the experience with specially treated rail for sharp curves in order to reduce the wear?
(j) Have we carefully weighed the possibilities of a more general use of sawed rail?
(k) Another consideration of economy in the maintenance of rail is the application of complete new joints in advance of rail replacements.
(l) Elimination of causes for surface and line kinks to prolong life of rail.
(m) Perhaps one of the greatest economies to be realized in the maintenance of rail is the practice or method of laying rail in the first instance.

Next let us consider switch and cross tie renewals, another large item of expense in the maintenance of track. Frankly, the absolute waste occurring each year in this respect is a reflection on our ability to curb it.

Is it not consistent to suggest your serious consideration of these important features in connection with renewal of ties?

(a) Are you using the kind of ties most suitable for the particular service requirements and are they purchased under the proper specifications?
(b) The size of ties used is very important.
(c) The inspection of ties in advance of application should be watched very closely.
(d) Inspection of ties in track in advance of renewals is an item that cannot be overestimated.
(e) Tie plating to prevent mechanical wear prolongs the life of ties.
(f) Proper adzing of ties saves money.
(g) What is your loss each year in your maintenance account due to split ties, and what have you done to curb this evil?
(h) How much damage is being done on your railroad, or your territory, in the improper spiking of ties?
(i) I have noticed in my experience the loss due to improper piling for storage of ties.
(j) There is another frequent loss in this material due to carelessness on the part of other departments taking good ties for other purposes.
(k) Are we carrying too many ties in our stocks and overlooking the heavy interest on the investment together with the liability of loss?
(l) What attention is being paid to an effort to secure properly seasoned ties in advance of application?
(m) In what way are we protecting our joint ties from the effects of rail running?

W. F. Muff, president of the association, responded to Mr. Johnston's remarks in behalf of the association. He pointed with pride to its growth and the large attendance. The success of the convention, he said, was to be ascribed

largely to the support he had received from the officers and executive committee, and to the work done by the chairmen of the various committees. He also expressed his appreciation of the co-operation received from the Track Supply Association and urged members to take advantage of the opportunities afforded for a study of the exhibits.

L. W. Baldwin Speaks

The roadmaster has important responsibilities aside from those relating to his work in maintaining track, said L. W. Baldwin, president of the Missouri Pacific, in his address before the convention Wednesday morning. One of these is to instill loyalty to the railroad among his subordinates. Another is to become so thoroughly informed on the vital questions affecting the relations of the railroads to the public, that they may be able to defend the railroads against undeserved criticism by those with whom they come in contact in their work. They should be able to present the facts concerning the marked progress which the railroads have made in rendering improved service in the years since the termination of federal control and what this has meant to industry in this country. They should know the reasons why the western railways are now asking for a five per cent increase in rates. Mr. Baldwin called attention in this connection to higher level of freight rates prevailing in other countries in spite of lower wages and standard of living of employees as compared with this country, and urged the supervisory officers to overcome a natural reluctance to study and discuss these problems among themselves.

Mr. Storey Presents Address at Dinner

W. B. Storey, president of the Atchison, Topeka & Santa Fe, spoke to 500 roadmasters and guests at the annual dinner, his address being in part as follows:

"Why are we here and why do we hold these conventions? We believe that anything that brings men together so that they may compare their experiences is worth while. Human knowledge is made up not of what one man has found out, but by the accumulated knowledge of many thousands of men. Such meetings are profitable because you have a chance to learn what the other man thinks. However, to make it profitable, each man must take something away of profit to him and to his road.

"Some of you are so busy trying to keep your tracks up that you may not have thought of the large problems that come up to administrators of railroads. While the Transportation Act as a whole has been a success and I think it should not be changed, we are in constant danger of new laws and we want to know the dangers we face. To illustrate, a bill is before Congress to cut rates on agricultural products one-third. Another vicious measure would throw the control of employees into the hands of the unions. We want to be let alone. We need friends and you can make friends for us."

Abstracts of the various papers, reports and addresses incorporated in the program appear below.

Report on Means of Prolonging the Life of Rail

Assuming that the rail and the track have been well maintained, the question before this committee is to determine what else affects the life of rail and what can be done to prolong its life. Factors which enter into this question include the following:

1—The quality of the rails when new.
2—The handling of rails.
3—The correct laying of rails.
4—Chipped and battered end rails.
5—Defective and damaged rails.
6—Rust.
7—Worn joints.

Quality of the Rail When New

The effect which the quality of the rail has upon its life is well demonstrated by the condition of much rail which was manufactured many years ago, when compared with almost any rail which has been manufactured and laid in recent years.

The rails manufactured 30 or 40 years ago are still standing up without mashing and without battered joints, even though laid with ½ to ¾ in. openings between rail ends. It would seem the part of wisdom to have chemical analysis made of samples of old rails which have given excellent service and to use similar chemistry in some test installations of rails made by modern methods and to modern dimensions.

Few people apparently realize how much damage can be done to rails by careless handling, but it is a fact that many rail failures are the result of careless unloading, a careless stroke of a spike maul, etc. For instance, on one road where all failed rails are held for inspection by a representative of the chief engineer, it has been found that in 75 per cent of the split web rails, where the crack is down in the middle of the web, or angling across the web, spike maul marks are to be found on the web, usually on the side opposite the beginning of the crack. Where blows from a spike maul in the web of a rail are so plainly a cause of failure there can be little doubt that similar blows on other parts of the rails also cause failures at times. The remedy is, of course, careful handling.

Correct Laying of Rails

Next to the effect of the quality of the steel upon the life of rail, the manner of its laying in track probably has more to do with its life than any one other factor. By manner of laying of rails is meant:

A—Whether or not it is laid with proper space between rails to take care of their expansion in warm weather.
B—Whether or not the low ties are surfaced up promptly or shims used to prevent the bending or kinking of the new rails.
C—Whether the new rails are being anchored promptly to preserve the distribution of the expansion space.
D—Whether the proper jointing of the rails, lining of track, etc., is being done.
E—Whether the rails are canted inward so as to present a normal bearing of the head to the tread of the wheels, or whether they are laid with the axis of the rail vertical, regardless of the bearing of the wheels.

The first factor in the correct laying of rails is to provide sufficient space between the rail ends to take care of the expansion of the rails in warm weather. Naturally this is of the most importance when rails are laid in cold weather, and of less importance as the weather conditions, when the rail is being laid, approach the maximum temperature which the rail will have to undergo while in service.

The second factor bearing on the correct laying of rails, the prompt surfacing up of low ties, must be given careful attention to avoid damage to the rails by bending or kinking, in the same spots where the old rails were down.

The third factor, the prompt anchoring of rails in place, is necessary to prevent the rails creeping, with

consequent bunching, causing tight joints at some localities and open joints at other places.

The fourth factor mentioned, which really is a grouping of several factors, covers the prompt and correct bolting up of joints, and doing other work necessary to put the newly laid rail in the best possible condition. The importance of providing for the expansion of the rails is shown by the fact that a rail 33 ft. in length will increase 1/16 in. in length for each 25 deg. of rise in temperature, and a rail 39 ft. in length will increase 1/16 in. in length for each 20 deg. increase in temperature, or in one mile the rails will increase 8.24 in. in total length.

Item E, that of canting the rails inward, is at least of equal importance to the necessity for providing for the expansion of the rails. Those opposing the use of canted tie plates and the resulting canting of rail, and consequently defending the laying of rail vertical are not defending an old and long established practice, as they seem to think, for, previous to the use of treated ties it was the general practice to cant the rail inward by adzing the ties enough to make the rail head show the wheel bearing in the center of its face.

With the advent of treated ties the adzing of ties was no longer good practice because of its damage to them and, to avoid damaging them by adzing, the practice of laying rail vertical was adopted for the protection of the ties and without any thought or consideration of the damage which it might do to the rails and the wheels. The practice was not the result of careful thought or well considered experiment, but, like Topsy, it "just growed."

The results to the rails, of vertical laying are:

1st—The wearing and mashing down of the gage side of the rail head until the face of the rail approaches the line of taper of the wheel.

2nd—The rolling out of a bead, or "hang over," along the gage edge of the rail head.

3rd—Within the last five or six years a new type of rail failure has become noticeable, in the form of a crack in the web at, or very near, the line of connection of the fillet, under the head, with the top of the web. Investigations have made it quite evident that this kind of failure is due to eccentric loading of the rail.

4th—For several years past rails have been showing more and more results of wear in the shape of black "wear" spots along the gage edge of the face of the rail head. Their origin is so uniformly along the gage edge of the rail that it is evident that they are due to the concentration of the load there, due to the vertical position of the rail.

5th—Since the vertical laying of rail has become the common practice, the alinement of track has deteriorated very noticeably, and it requires only a test of canted tie plates to prove that the line of the rails is much better where they are canted inward than where laid vertical.

6th—The wear of the wheels due to contact with the rails is bound to be at the point of contact, and the depth of wear is governed by the width of bearing. With rails laid vertical, a new wheel must make contact with a new rail well toward the inside edge of the rail and near the flange side of the wheel. This must result in wearing a groove in the wheel deepest near the flange and not normal to the face of the wheel. If the rail is canted to the same extent as the taper of the wheel the bearing between the two is normal to each, and the wear more nearly preserves the taper of the wheel than will any other form of contact.

For these reasons it is necessary, if the greatest possible life is to be gotten out of rails, that they be laid canted to the same extent as the taper of the car wheels. To do this, and at the same time protect the ties, canted tie plates should be used.

Chipped and Battered Ends and Defective and Damaged Rails

Two causes are largely responsible for chipped and battered end rails. One is the quality of the rail itself, and the other is the laying of the rail too tight without sufficient space for expansion. Prior to the change in the chemistry of rail steel a battered end rail was found occasionally but the occasions were not frequent, as is proven on the many miles of the old rail still in tracks. On the other hand, rails of recent manufacture usually show battered ends within three or four years, and in many instances they have become so numerous that they compel the replacement of the rail at half the service which it should give, and would give except for them.

A great many of the battered end rails result from the chipping of the rail ends. And in almost every case of chipped end rails, the rails are either tightly together or have been tightly together, as is proved by the depression in the face of one rail end made by the overlap from the other rail end. The projecting metal rolled out from the head of a rail will not overlap the adjoining rail if there is any opening between them, but will turn downward between the rails. When the contraction of the rails in cold weather produces an opening between rails previously tight the overlap rolls downward, forming a projection beyond the part of the rail end lower down, and when hot weather again brings the rails tight, the pressure on this projection splits a chip out of the face of one or both rails, thus producing the chipped end and the beginning of a badly battered end rail.

Damaged rails are of numerous kinds, the most common being no doubt those damaged by spinning drivers. Other types are kinked rails, rails damaged by broken wheels, rails bent or twisted by wrecks, etc. Rails burned by spinning drivers are rarely burned deeply enough to do any damage unless the engine drivers are allowed to run longer than necessary.

Remedies for Damaged and Defective Rails

While the preceding has dealt with the factors which affect the life of rails, and the prevention of such conditions, some remedies are available for prolonging the life of rails after they have become damaged.

The remedy which should be mentioned first is the building up by some welding process of rail ends which have become chipped or battered. This properly comes first because it is a remedy which can be applied to the rails in track as soon as the damage occurs. During the last half dozen years the practice of repairing battered rail ends by welding, either by gas or electric processes, has grown and is proving both successful and economical.

The building up of chipped and battered rail ends not only prolongs the life of the rail, but it reduces the cost of keeping the track in good surface, as it is difficult to keep the joint ties up where the joint is chipped or battered. It also helps to protect the ties from wear which would otherwise result from the pounding of the wheels over the bad rail ends.

Sawing Off Rail Ends

As the battering of rail ends become more frequent and troublesome it sometimes becomes necessary to remove rail from track "out of face" for this cause alone. In such cases the rails are generally in good serviceable condition except for a few inches at each end, and it is found desirable to have the worn ends of the rails sawed off and the rails redrilled, after which they frequently are suitable for reuse in the same class of track from which they were removed. This process is preferable to rerolling, because it preserves the fishing spaces of the rails unimpaired, which is not always the case with rerolling. It also preserves the hard face of the rail (the service temper) that has been produced by the cold rolling of the car wheels and which helps to resist further wear. This the rerolling process does not do. In addition, the resawing of the rails is much cheaper than rerolling.

When rails are being resawed the cut off should in-

clude the entire length of the joint bars, in order to remove the wear of the joint bars on the under side of the rail head, and thus give the joints a full and true bearing when the rails are relaid. New joint bars should be used in relaying resawed rail, for the old joints are usually more badly worn than the rail being removed.

Rerolling of Rail

For badly worn and battered rails, the first remedy to attract general attention was to send the rails to a rerolling mill and have them rerolled to a slightly smaller section. By this process the decrease in the size results in an increase in the length of the rail so that it is cut off to its original length.

In service the rerolled rails proved very erratic, giving satisfactory results in some cases and very unsatisfactory results in others. As a consequence, the rerolling of rail has practically been abandoned, except for rails which are curve worn, rails with badly roughened heads, rails which are twisted, and rails which are so badly bent or kinked that they cannot safely be straightened cold. For the reconditioning of such rails rerolling seems to be the only process available.

The sixth factor in life of rails as outlined above is rust. Near the sea coast, or bodies of salt water, and, perhaps more seriously on tracks which carry a considerable number of refrigerator cars in which salt is used to aid the cooling, considerable damage is done to rail and track fastenings by rust.

A reasonably satisfactory remedy for this is found in the rail oilers, consisting of pneumatic machines which spray oil over the rails, below the face level as the machine is drawn along the track. The results of such oiling are reported to be very satisfactory and where the tendency to rust is very bad its benefits are found to be far greater than the cost.

Worn Joints

The seventh and last factor in the life of rail is worn joints, or more properly, joint bars. There is more wear of the joint bars and of the rails where the bars are in contact with them than is generally appreciated. In the case of the joint bars this is particularly aggravated directly under the ends of the rails. It frequently happens that after six or seven years in track the wear of the bars becomes so great that the rail ends begin to dip down at the joints in spite of all maintenance efforts. It then becomes advisable to replace the joints with new or repaired joints which do not have the worn faces.

A process has recently been developed to recondition the rail joints by heating them to a forging temperature and passing them through a forging press, thus restoring the bar to its original fishing fit, following which they are heat-treated. Only such joint bars as are of good material and of sufficiently high carbon to make the heat treatment effective should be selected for such reconditioning.

Committee: C. W. Baldridge, assistant engineer, A. T. & S. F., chairman; William Shea, general roadmaster, C., M. & St. P.; W. R. Wires, roadmaster, C., B. & Q.; J. E. Cullin, division engineer, L. V.; W. R. Groshell, roadmaster, A., T. & S. F.; P. J. McAndrews, roadmaster, C. & N. W.; G. W. Morrow, supervisor, N. Y. C.; William Wharry, general roadmaster, C. N.; W. H. Sparks, general inspector of track, C. & O.; D. E. Callahan, supervisor, Penna.; M. Henry, supervisor, C. & E. I.; T. F. Donahoe, general supervisor, B. & O., and H. P. Stafford, assistant general roadmaster, D. S. S. & A.

Report on the Weeding of Tracks

It is the aim of this committee to determine the best method of exterminating track weeds from the standpoint of economy and for the purpose of avoiding interference with regular maintenance work at a season when trackmen should be engaged in other important duties. To this end, the various methods of weeding track, including the old time hand practice, burning, steaming and chemicalization, are discussed in the following paragraphs.

Hand Methods

The average cost of hand weeding of tracks in the various ballasts is $130 per mile per season with the lowest cost reported as $80 and highest $225. In rock, stone and slag ballast 18-ft. wide the average cost of two to four cleanings with shovels and by hand pulling is $155, with the minimum $92 and the maximum $276. These figures are made on the basis of 40 cents per hour for labor and represent the cost of making from one to three cuttings.

Hand weeding necessitates the general stirring up of ballast and produces dirty track, especially where the ballast is more or less light. Unless the weeds and grass that have been cut are thoroughly raked up and disposed of, they will, under favorable weather conditions, commence to sprout and grow almost immediately so that the ordinary ballast is seldom entirely free from a growth of vegetation at some stage in the growing season. Of course this does not apply to the heavier ballasts but the expense of maintaining a neat appearance by hand methods runs up correspondingly.

Burning Methods

For many years a number of railways have operated weed burners of various types on the branch lines, and within the last few years improvements have been made in the design of these outfits that have reduced the amount of oil consumed in burning about one-half. In general the original type of locomotive-propelled burner operates at a cost of about $13 per mile per burning for a width of about ten feet, including train and fuel costs, etc., the two and three burnings necessary per season cost from $26 to $39. These outfits use about 80 gal. of crude oil per mile per burning, the oil being pumped from a special tank on the car to the track burners where it is volatilized by air pressure.

The Illinois Central made an improvement in its burners of the locomotive-propelled type last year by changing the principle of the oil delivery so that it is atomized by superheated steam instead of air which reduced the crude oil used to about one-half, or 40 gal. per mile per burning. The main advantages are that the burners may be ignited and cut out in an instant, thus dispensing with the delay of the former type, and the intensity of the burner flame is under full control of the operator. In 1924 this outfit was operated at a cost of $6.20 per mile for burning 1,286 miles or one-half the cost with the old type burner mentioned above.

It is understood that further improvements are now being made to reduce the costs still further.

A portable weed burner is in use this season on the Great Northern, the Northern Pacific and the Soo Line where it is giving satisfactory service. It is propelled by a 10 or 12-hp. gas engine and vaporizes the oil by a high speed blower. Various low grade oils are used. The oil capacity ranges from 575 to 1000 gal.; about 45 gal. of oil is used per mile.

The performance of a portable burner on a 136-mile branch line on the Soo Line during the latter part of June, 1925, in a 14-day test when the line was burned double,

the vegetation being scorched while going in one direction and burned upon its return, is as follows:

6,387 gal. distillate oil at $0.063	$402.38
124 gal. gasoline at $0.10	12.40
Operator 140 hours Operator helper 140 hours	139.65
	$554.43
Total miles burned, including 6 miles siding	142
Cost per mile	$3.90
Miles burned per day	10
Gallons distillate per mile	45

Steaming Method

The steaming method employs a system of pipes arranged on a flat car with a superheater locomotive, making it possible to apply superheated steam to the vegetation at a temperature of about 500 deg. The cost of equipment for this operation is about $2500. The burner aprons are hung so that they come close to the ballast. In general the cost per mile of one burning ranges from $10 to $16, covering approximately 10 to 14 miles per day. While operating under ordinary conditions, a speed of 2½ miles per hour is made although in rainy weather the speed is reduced to 1½ miles per hour.

A good locomotive is a necessity with this method as a great deal of water is consumed and the providing of steam is one of the main requirements. Reports show that it is necessary to have as many as six tank cars in the outfit to provide water for the steaming between watering stations. A typical statement of the cost of this operation may be taken from the following figures of the performance of a machine on the Santa Fe where 136 miles was steamed in 1922.

Wages of train and engine crew	$580.56
Engine watchman	34.02
Wages water service man	14.80
Wages of laborers operating machine	116.30
Expenses of laborers	31.00
Work train expense	304.48
Engine rental 10 days at $25	250.00
Rental of caboose 10 days at $1	10.00
Royalty for use of machine $1 per mile	136.00
Total	$1,477.16

or $10.86 per mile, one burning. At least three steamings are required per season.

Extermination by Chemicals

The extermination of track weeds by chemicals has been practiced more or less for 20 years, but until recently the cost of the ingredients has limited the operation to the heavily-ballasted, high-class lines. With recent reductions in prices, it would seem that there is a larger field for chemical treatment. Ordinarily the arsenious content of this solution is about four pounds per gallon and it is usually applied under the supervision of the chemical company in a solution of from 1 gal. of the weed killer in 4 gal. of water to 1 in 20.

The supplying companies claim that under ordinary conditions with a reasonably heavy growth of vegetation, $40 per mile is a fair estimate of the cost of treating a width of about 18 ft. including the cost of train service, etc. In determining the amount of concentrated solution per mile one may figure on from 8 to 10 gal. for each foot width of track one mile long for the initial or first treatment, although there is a wide range in application, the extremes being as little as 25 gal. and as high as 125 gal. of the undiluted or concentrated chemical, depending upon the density of the weed growth and the resistance of the particular types of vegetation.

Many roads have been opposed to the use of chemicals, owing to the solution being poisonous to stock. One of the chemical companies claims that a non-poisonous solution has been perfected that retains every quality necessary to kill weeds. Where the poisonous solution is used the precaution of keeping cattle away for a period of about four days after the application, lessons the liability of claims through the loss of livestock. Most of the chemical companies assume responsibility for livestock claims under a standard agreement.

In treatment in the second and subsequent years, the quantity of solution applied to track may be reduced materially. Equal or better results being obtained the second year with between 20 and 30 per cent less solution.

The initial idea in applying the weed killer was to saturate the ground through a sprinkling method in an attempt to reach the roots but this practice has been superseded by a system whereby a stronger solution is used which exterminates the vegetation by the absorption of the destructive chemical through the tops of the weeds and grasses to the roots.

Various members of the committee report that the cost of chemical treatment ranges from $30 to $90 per mile where only one treatment was given per season and where in most cases the width of treatment was about 12 ft. or to a point a short distance beyond the ends of ties. There seems to be no particular differences in the cost per mile in the various ballasts, including stone, gravel, dirt and cinders.

Results are being obtained in ordinary gravel and cinder ballast by weed cutetrs driven by a 10 to 15 hp. engine, mounted on a car from which cutting blades are forced through the ballast shoulder beyond the ends of the ties. The device is operated by from two to three men over about eight miles of track per day and will do the work of a number of men.

Committee: J. B. Kelly, general roadmaster, M. St. P. & S. S. M., chairman; R. L. Longshore, division engineer, Wabash; E. E. Crowley, roadmaster, D. & H.; J. A. Rutledge, roadmaster, S. P.; J. Daugherty, division roadmaster, St. L.-S. F.; M. V. Holmes, roadmaster, A., T. & S. F.; W. B. McVan, roadmaster, A., C. & Y.; E. P. Hawkins, division engineer, M. P.; W. O. Rutherford, track supervisor, C., G. W.; J. J. Navin, supervisor, Penna.; J. E. Sewell; A. Larson, roadmaster, N. P.; A. W. Wehner, roadmaster, S. P., and F. H. Hanson, division roadmaster, G. N.

Discussion

The reading of this report led to extended discussion which centered on the policy of employing a system tie inspector. The preponderance of opinion was in favor of the positive, that the inspector was neither necessary nor desirable.

Report on the Roadmaster's Responsibility for the Promotion of Proper Relations with the Public

Railway men generally, and the maintenance officers as quickly and as keenly as anyone, know how important it is that there shall be a proper understanding and friendly relation between the public and the railroads. With a form of government under which the opinion and will of the public ultimately decides the policy and the law, it is essential that true facts be known by the people, so that the opinions formed and decisions arrived at will be based on correct information and therefore be right, just and fair to all concerned.

If the passage of laws that are undesirable and harmful to both the railroads and the people is to be prevented, it must be by making known to the public the actual facts and conditions under which the railroads are endeavoring to

give to the country the service demanded and needed. The railroads are trying to put these facts and conditions before the people.

Adequate Earnings Necessary

Only as a railroad earns the money necessary can it pay its employees a fair wage, and the earning of the money for wages depends on exactly the same conditions as the earning of money for dividends. Therefore, from a selfish standpoint, the importance of this matter to the employee is plain.

The standard of maintenance and operation on a road depends on the earning of the necessary revenue. If earnings justify it, the use of more material and larger forces will be authorized and a higher standard demanded. It is not necessary to point out what this means to the man who enjoys his work, as most maintenance men do. As the maintenance of way department is too often the first affected by a reduction made necessary by lack of revenue, the importance to a maintenance officer of the opportunity to earn on the part of his road is at once clear.

An understanding and friendly public can be secured by making known to the people the problems the railroads have to meet and the methods and means being used in the effort to give service. Possibly more effective, however, is the personal work of each individual employee in making friends for the railroads of the people he meets, especially those with whom he comes in contact in a business way as a railroad representative. Many cases can be cited where failure to do this has resulted in trouble and great expense for the railroads. The maintenance officer, in the performance of his own assigned work and as the man determining to a large extent the attitude and policy of those reporting to him, has opportunities and, having opportunities, has responsibilities peculiar to his department. Once all maintenance men are awake to the importance of this question and aware of the duty they owe to aid in bringing about the proper results, as a rapidly increasing number already are, they will be as alert and resourceful in discovering and adopting means and methods of accomplishing it as they have been in their regular work.

Two Methods of Approach

In considering means and methods two lines of attack are open to the officer supervising maintenance of way work:

1—His personal effort and what he can accomplish himself.
2—His influence in inspiring and training the men under him.

These are of equal importace. The things to be done are so many and so varied that the committee can only attempt to mention a few, among which are the following:

Handle promptly complaints or requests for repairs that are proper. The failure to repair a farm crossing, gate or fence; neglect of ditches and drainage; a stock yard or industry track in such shape that a car cannot be pinched along, have caused ill feeling and started agitation that was very troublesome and expensive to overcome.

Approach these matters as a neighbor. That is your relation, as the representative of the railroad to the farmer and land owner. Approach them as a salesman with service and transportation to sell. This you are to the shipper and traveling public.

Put yourself in the farmer's place and realize the feeling engendered if a crop almost ready to harvest is ruined because the railroad blocked the drainage, or stock is killed because of a defective fence. Settlement may be made and damages paid. This, however, is a direct loss to the railroad and very often does not restore the friendly feeling that once existed. We, of course, know that unreasonable claims are made in some cases, but that is only an added reason for preventing the cause.

Do not make promises that you do not expect to or cannot make good. Nothing is more aggravating than to be put off with fair words. Good intentions are counterfeit. Impress upon your foremen that they also must be governed by these same principles. They come in contact with many people you never see. Insist that a foreman keep a neat and attractive place if he lives on company property and do all possible to encourage him to do so if he owns his own home. The foremen and the agents represent the road to many people. The president and the board of directors are judged by what the local representatives are and do. Impress this upon the local man. Make him feel it. The foreman whose home surroundings are neat is usually a competent man and his work shows it. On one road the man charged with selecting men for promotion to positions as roadmasters visit the headquarters of foremen under consideration and learns first hand how they stand in their home town as citizens and neighbors. A similar plan might be followed in selecting men for promotion to a place as foreman.

Let your foreman know that you trust and respect him. He is your representative. Insist that every one else respect him. Permit no one to belittle or abuse him. Help and encourage the foreman to win for himself and family a place in the town and community. If he is on the school board, a member of the local council or some similar position, it is indicative of the regard his neighbors have for him and through him for the railroad he serves. Where the local man is so regarded, as a rule the railroad has little trouble in that community.

Impress upon the management, if necessary, what a neat home for the foreman means, both to him and to the standing and reputation of the road. Many executives are alive to the importance of this, but some are not, and it is the roadmaster's place to drive it home.

Use care in selecting crossing flagmen and give time to their training. In this day of a nation on rubber tired wheels, it is hard to estimate the number of people who form their opinion of a railroad from their contact and experience with a crossing flagman.

Maintenance Officer Has Many Opportunities

There is no means as effective as personal work and contact. The maintenance officer has many opportunities as he goes about his work. The committee urges that he be more diligent than ever to watch for and take advantage of them.

Another opportunity open to roadmasters and other maintenance officers, and since the opening is there, so is the responsibility, is to be adequately informed regarding railroad affairs so as to be able to correct many wrong impressions which exist. In the past the activity and responsibility of a roadmaster may have been limited by the right-of-way fences and the ends of his division. This is no longer the case. The roadmaster of today has a wider field and a greater opportunity. We frequently hear persons who may be well informed in many ways discuss railroad problems and suggest cures and changes. Having a very hazy, indefinite or actually incorrect knowledge of railroad affairs, they usually reach wrong conclusions and form opinions detrimental to the welfare of the roads. It is the opinion of the committee that we will be better employees and better maintenance men as well if we learn something concerning the questions so often discussed.

Many roads distribute from time to time pamphlets giving correct information. Take advantage of these. Have the facts and make judicious use of them. Do not hesitate to give actual information. A roadmaster has many opportunities, on trains, with a farmer along the right of

way, among elevator men or stock shippers at the station, to say a few words that may correct a wrong opinion and win a friend and supporter for the railroads. Since we have the opportunity, let us assume the responsibility.

Committee: H. R. Clarke, general inspector permanent way, C., B. & Q., chairman; George E. Boyd, Railway Review; L. M. Denney, supervisor of track, C., C., C & St. L.; J. P. Davis, engineer maintenance of way, C. I.; F. T. Beckett, district engineer maintenance of way, C., R. I. & P.; John F. Whitney, assistant engineer, B. & M.; A. M. Clough, supervisor, N. Y. C.; A. L. Kleine, roadmaster, A., T. & S. F.; H. M. Smith, roadmaster, N. & W.; B. E. Haley, general roadmaster, A. C. L., and J. B. Baker, engineer maintenance of way, Penna.

Report on the Programming of Section Work

To program section work successfully consideration should first be given to the establishment of standard methods for obtaining results in the most economical and efficient manner, and to the unit cost of all work to be programmed. This unit cost varies in different parts of this country and even on different divisions of the same railway system, being determined by various items such as the class of ballast, of rail, traffic interference, etc., as well as by the class of labor and the various labor-saving devices in use. For this reason it is our opinion that each roadmaster should first standardize the methods of performing each kind of work in so far as it is possible to do so. In doing this a more uniform and satisfactory result is obtained. After this is done it will be easy to arrive at the unit cost of each kind of work, either by a time study of the work as it is being done by the most efficient gangs or by a system of daily reports from each foreman on which he records the cost of certain items of work in man hours. Considerable has been written concerning the unit costs of various classes of work, but these costs are not applicable to all local conditions, except possibly a few general items.

In order to divide the work to be done on each section throughout the year more equally, it is suggested that the territory to be maintained by each section gang be equally proportioned, taking into consideration the various classes of main tracks and branch lines, the switches, crossings, side tracks and ditches, and any unusual or chronic condition that demands additional attention. The Committee on Economics of Railway Labor of the American Railway Engineering Association has given some study to the reduction of all features of track to the equivalent of one mile of first main track. In the A. R. E. A. Proceedings, for 1925, is a table of values derived from actual costs extending over a period of years on a main line division which was the subject of special study.

By the use of such a table, the equated mileage for each section can be determined. This will permit uniform allotment of labor and should result in the accomplishment of uniform maintenance conditions. When these matters have been given due consideration one is in a better position to program section work.

A program should be made for each individual section. This is to be accomplished by a careful inspection of each section by the roadmaster or supervisor in company with the foreman, before the season's work is to begin to determine the things that are to be done and the relative importance of each. At that time, a record should be made of the work to be performed, from which a program can be prepared. This program can be made to arrange for the various kinds of work to be done in the seasons of the year that are most suitable.

In the preparation of the program there are certain general items that can be done on each section at approximately the same time. This will enable the supervisor or roadmaster to keep a better check on the results by easy comparisons. These general items include:

1. Annual tie renewals which should begin as early in the spring as the weather conditions will permit. At least 75 per cent of the renewals should be completed by July 1.
2. Such rail replacements as are to be made by section forces, i. e., the changing out of curve-worn and battered-end rails, can be done at any time of the year when traffic conditions are most suitable.
3. Ballasting out of face should be started as early as possible in the spring and completed by July.
4. Although some carriers designate one or two days of each month for tightening bolts and setting down spikes, it is believed that better results can be obtained by having each section gang do this work out of face over the entire section twice each year, in March and September.
5. Cutting right-of-way is to be done as early in each year as the growth of vegetation demands; however, the most effective time for a thorough cleaning of the right-of-way is in August when the sap is the highest.
6. The cleaning of ditches gives better results when done just before the wet season, or during October and November.

In addition to these general items which should be arranged on the program with due consideration to the local conditions, a number of special items pertaining to each section are to be considered. A proper record of these items of work should be made at the time of the inspection and a time set for doing them and arranging them in the program to best meet the requirements of a uniform force throughout the year. However, it will be necessary on some roads to give thought to the prospective labor allowance. A few of these special items are:

1. Fence repair and rebuilding.
2. Switch tie renewals.
3. Yard or side track repairs.
4. Repairs to unusual or chronic conditions.
5. Station grounds.
6. Cleaning ballast.
7. Weak conditions that are to be eliminated by permanent improvements.
8. Other conditions that will be found during inspection.

In the establishment of standard methods and the determining of the unit cost for various classes of work it will be necessary to require daily reports from foremen conducting the test. The forms for these reports can easily be determined by each roadmaster in order to meet the requirements of all local conditions. However, we appreciate that additional reports are a burden to the average section foreman, and realizing the unsatisfactory results that result from unnecessary reports, we recommend that after the determination of the necessary unit costs has been completed, foremen be required to make reports only once a week concerning the work accomplished as covered by the program, these weekly reports to supplement the usual reports that are required to keep district officers posted on expenditures.

We are of the opinion that no single factor has a greater influence on the efficiency of maintenance of way work than that of programming it in such a manner that it can be carried on systematically throughout the year. Therefore, the work planned on each section's program should be arranged so as to employ as nearly as possible a uniform average section force the year round. Steady employment is an incentive for a better class of labor, and will result in efficiency.

In order to avoid any interruption of the program the matter of requisitioning material must not be overlooked. This is to be done in sufficient time to have the desired quantity on hand at the time the work is to begin.

It is of utmost importance that the program, when properly prepared, be adhered to as closely as possible, for if deviations of apparently unimportant details are permitted, the entire program will lose its effectiveness through other and more serious interruptions.

With the ever increasing demand for economy in track maintenance, the "programming of section work" is destined to become of tremendous importance. The committee, therefore, recommends that a new committee be appointed to carry on a more extensive study of this subject and to endeavor to arrive at more definite plans for it.

Committee: W. C. Pruett, district engineer, M-K-T, chairman; P. J. McAndrews, roadmaster, C. & N. W.; J. B. Martin, general track supervisor, N. Y. C.; G. H. Watson, division engineer, B. & M.; H. L. Stein, roadmaster, C., B. & Q.; F. S. Purdy, general track inspector, A., T. & S. F., and W. E. Robinson, roadmaster, F. E. C.

Discussion

The members expressed their hearty accord with the idea of programming track work, but a considerable difference arose as to the necessity for advocating uniform forces as a means of increasing the effectiveness of programming. Some felt that the association should not advocate the employment of a larger force in winter as being unsound in principle and ill-advised. The majority was clearly in favor of recommending more uniform forces as in the interest of more economical maintenance, and the report was adopted without change.

The Treatment of Soft Roadbed

By A. N. Reece
Chief Engineer, Kansas City Southern, Kansas City, Mo.

One of the severest tasks with which a roadmaster or section foreman has to contend in the maintenance of uniformly good track is the existence in certain sections, or over certain stretches of track, of soft spots, which frequently require daily attention in order to maintain suitable track conditions. Undoubtedly most track men have, for various reasons, cut across roadbeds in both fills and cuts where soft spots occur, and have a clear understanding of the conditions obtaining. Probably the condition most commonly encountered in such an examination of a roadbed cross-section is the bowl-shaped depression under the roadbed, the stratum forming the bowl of impervious material which contains water being covered with various strata of fill material, such as cinders, rock dirt, etc. The structure forming the bowl, which contains the moisture or water, is usually found to contain marked depressions immediately below the ballast section under each rail with a conical projection near the center of the track.

The principal cause of soft spots in roadbed, either in cuts or fills, is improper drainage. This may have been occasioned by the stopping up or breaking of waterbearing strata immediately under the surface of the ground on which the embankment, or through which the excavation for the roadbed, is constructed. In any event, the water becomes impounded beneath the roadbed. The material causing this impounding is usually a decomposed shale, such as gumbo, hard pan or clay. Under the action of the pounding of traffic, this material pulverizes and, with water, forms a paste which obstructs even the naturally sluggish percolation of water through it, forming an almost water-tight pocket to which it is essential to afford some method of effective drainage before track can be kept in either line or surface. Ballast applied where such water-pockets exist does little good, since it sinks into the plastic material and makes the water-pocket larger and harder to overcome. Until these soft spots are drained or completely filled with material that replaces the plastic or saturated substance, they require frequent resurfacing and almost constant attention.

Assuming that soft roadbed is due to improper drainage, then its cure or treatment resolves itself into applying a system of drainage that will release the water or excess moisture. This is essential before the condition can be cured.

Many makeshift attempts have been made in the early stages of operation of new lines to cope with soft roadbed conditions, which can hardly be considered as treatments of these conditions. These will be passed over without comment other than merely citing some of the temporary expedients resorted to, such as the laying lengthwise under the track structure of old ties or slabs from sawmills, and the use of trees and rocks. In many instances soft spots were filled with cinders, which usually increased the soft area and at best gave only temporary relief.

For several years two general methods have been widely recognized for the treatment of soft roadbed. The first of these is the construction of cross and lateral rock drains; the second, the installation of a system of drainage by the use of vitrified clay pipe.

Cross and Lateral Rock Drains

Cross drains are used principally in fills, the practice being to excavate through the entire roadbed or one side of the embankment to a depth below the affected area, the excavated section ranging in width from 4 to 10 ft., and of varying depth, depending on the depth to which the roadbed is saturated. These trenches are then filled with rock or one-man stone, conforming to the roadbed section and extending, ordinarily, to the base of the ballast.

Lateral drains are better adapted to cuts, trenches being excavated at the end of the ties. The general practice is to excavate a trench on each side of the track, extending the full length of the affected area, these trenches averaging 6 to 8 ft. in width and not less than 4 ft. deep, many times extending to a depth of 8 or 9 ft. The trenches should be filled with boulders or one-man stone to a point near the sub-grade or base of the ballast, and as a finish, to prevent their stopping up with loose dirt, the top 6 to 12 in. should be filled preferably with good, clean cinders. After this work is completed, a drainage outlet should be provided, in the form of a trench filled with rock or a tile line extending to a natural outlet beyond the end of the cut.

Tile Drains

To insure good results from the drains, it is essential that they be properly installed. First, an investigation should be made to determine the depth of the saturated material. This can best be accomplished by digging test holes. After this is determined, the drainage system itself should be laid to grade, with sufficient drop to allow the water to drain off readily. A fall of two inches in the main lateral drain lines is considered the minimum drop practicable.

Another important feature in the installation of tile

drains is to place the main lateral as far back from the track as possible in order to get it outside the affected area so it will not be heaved out of position by the action of traffic passing over the soft material. Lateral drains should be laid at least 12 to 24 in. below the lowest point affected, with tee-joints spaced from 20 to 50 ft. apart, from which cross drains are laid under the roadbed to tap the sections containing water. To be effective, these cross drains must tap all areas where moisture is contained.

After the trenches have been excavated and the tile installed with open joints, the drain lines should be filled, preferably with engine cinders. On the cross drains, the cinder filling should be carried up to the sub-grade or base of the ballast. On the lateral drains it is advisable to carry the cinder filling 12 to 24 in. above the tile, leaving sufficient room to complete filling with excavated material in order to permit maintaining the track ditch over the top of the laterals.

With single track, one lateral is ordinarily sufficient, with cross drains extending under both rails. However, where two or more tracks cross the affected area, it is advisable to place a lateral line on each side of the roadbed. The size of tile used depends on the length of line to be constructed, and in any event should be not less than 6 in. in diameter, and preferably 8 or 10 in. Cross drains should be 4 to 6 in. in diameter. Bell-end tile give better results than farm tile.

The success of such a drainage system is dependent upon carying out the work under a well planned program, and laying the drains to a grade line that will afford drainage of the main laterals. In climates where frost extends to a considerable depth, the tile must be placed below the frost line; and as heretofore stated, in order to insure proper functioning, the tile lines must be located in solid material beyond the affected area where they will not be subject to heaving from the action of traffic over the roadbed.

Raising the Standard of Maintenance Forces

By Col. F. W. Green
Vice-President, Saint Louis South Western, St. Louis, Mo.

After hearing so much today about how the work of the maintenance of way department can be improved by the use of better material on the one hand and better tools on the other, I still hope that I can persuade you to believe that the subject I am to speak about is of greater fundamental importance than that of either improved materials on the one hand or improved tools on the other. This subject is good men. By good men I include both the supervisory and the working forces.

The Requisites of Good Men

The first requisite is good supervision; in this I include the supervisory forces ranging from the president to the foremen. Without good supervision the employment and performance of the working forces will not be efficient as a whole. Now and then efficient laborers will be found, but without the stimulus of competent and efficient supervision, they will not long continue efficient.

Successful leadership requires the possession of many traits and in the selection of leaders from section foremen up, the officer charged with the duty of making the selection should keep these in mind. It goes without saying that no man possesses all of them in the exact proportions which the ideal man should have, but in any case the man selected should possess them in sufficient degree to enable him adequately to discharge the responsibilities of the place.

At the head of the list I would place *common sense,* as a man without common sense is worthless as a leader. Next I should place *initiative,* as a man without initiative is as useless as a watch with a broken main spring. Next comes *resourcefulness.* Without it a leader is likely to suffer the embarrassment of having to confess in the presence of his men that he does not know what to do or how to do it and loses their respect for his leadership.

Next comes *adaptability,* which, being interpreted, means that the leader can readily adapt himself to any situation in which he finds himself. He can get along with people, whether or not they are his particular kind of people, and he can do any kind of work whether it is his particular specialty or otherwise. Next comes *moral courage,* which enables him to say the thing that ought to be said at the time and place where it should be said, both to his subordinates and his superiors.

Next comes *decision* and without it all of the other qualities are as naught. A leader should be able to size up a situation and reach his decision quickly, and having reached it to stick to it. A man who vacillates or who continually changes his mind and his methods can never be a successful leader. You can never put your hand on him.

Next, he must be *competent.* He must not only know what to do and how to do it, but in addition must be able to show his subordinates how to do it in the best way. Hardly anything loses the respect of the subordinates for the leader more quickly than his lack of competence. Competence includes the ability to know what men can do and then to make them do it.

Next comes *fairness.* A successful leader must always be able to see both sides of a question. He must consider impartially and decide justly any question arising which requires his decision. He must not take unfair advantage of his subordinates on the one hand or of the company's interest on the other, and he must be as prompt in praise as in punishment, as well as frankly to acknowledge any error he may have made. Next, he must be a *real leader,* which means that he will lead his forces rather than drive them. We are living today in an age of mutual co-operation and helpfulness and the successful leader of today is the one who can inspire and maintain a spirit of helpful co-operation, rather than a resentful spirit of sullen obedience. Next comes *enthusiasm.* A man in any work who aspires to succeed must love that work. He can never accomplish the best results unless he shows an eager enthusiasm and can impart it to his subordinates.

Next comes *tact,* which is an intuitive appreciation of what is proper. A leader who is inconsiderate or who shows a lack of sympathy where sympathy is indicated, is justly described as a brute. On the other hand, a tactful leader establishes and maintains cordial relations with everybody, even his enemy. Next comes *imagination,* which means the ability to picture in his mind's eye how the work that he is doing will look when it is done. The ability to visualize the completed job is of great value to the leader charged with the duty of its execution. It enables him to plan his work more intelligently and carry it forward without interruption.

He should be *alert* and *observant.* It has been said that

the most useful thing in the world is a glass eye at a keyhole. If this be true, then a close second is the eye that sees not and the ear that hears not. Alertness is almost a sixth sense in that some men instinctively possess it in high degree, while in others it must be assiduously cultivated and even then is sometimes developed only to a rudimentary state. Our ideal leader will also possess the necessary analytical and constructive ability to enable him to function efficiently. I mean by this that he will know how to plan as well as how to push. Dr. Stanley Krebs says that a plan without push is theory; push without plan is fussiness; while a plan with push is successful accomplishment.

There are no doubt other essential qualifications that our ideal leader should possess, for example: energy, resolution, firmness, as well as integrity of character and a willingness to take orders as well as to give them and to co-operate loyally with all interested parties in the successful accomplishment of the job at hand; but, of all of these, I would emphasize the quality of perseverance—the "never-say-die" spirit. Fighting determination and intrepid resolution seldom fail, while perfunctory attempt and chicken-hearted effort are invariably the accoutrements of the man who is forever complaining of how badly the world treats him.

The Forces to Be Supervised

Having progressed thus far in raising the standard of maintenance forces by improving the quality of the supervision as above proposed, we now turn to the other side of the subject—the forces to be supervised. I do not believe it takes any extended argument to convince a group of roadmasters that if the supervision is 100 per cent there will be very little difficulty in raising the standard of the laboring forces to a much higher degree of perfection than exists at present.

In the employment of men, competent and efficient supervision will give preference to those who have the ability, mental and physical, to do the work for which employed, as well as showing promise for greater responsibilities in the future. If the laborer is given to understand that promotion can be earned by diligent and effective performance, he has something to work up to. Without such hope, he is likely to be indifferent and inclined to do only enough to avoid being dismissed.

It has been my observation that willing and efficient men are found where three conditions exist, namely (1) a good foreman; (2) a good prospect for promotion; and (3) continuous work at standard rates of pay. There are good reasons for this attitude of mind on the part of laborers. They know from bitter experience that when they work for a good foreman they will be well treated, not in the sense of being permitted to loaf on the job, but rather because a competent foreman knows what men can and should do and requires them to do it. He knows the various tricks of the trade by which the back-breaking kind of work can be reduced to a minimum and the strength and safety of the gang conserved, so that they can accomplish more with less effort than a gang led by a poor foreman. Moreover they know that their own chances of advancement when learning how to do the work under a master is much better and their sense of self-interest and ambition for promotion create in them a desire to work for a good foreman rather than a poor one. Notwithstanding all that has been said about all men being equal, the fact remains that experience has abundantly proven that all good laborers aspire to some recognition of their worth. We cannot blink the fact that the title of "boss" and a few cents more per hour changes many a democrat into an aristocrat.

The question of continuous employment is fundamental in its importance. I do not know of anything, even incompetent supervision, which will ruin the morale of an organization more quickly than repeated alternations of increasing and decreasing working forces. A grave responsibility rests upon the executives of our railroads so far as possible to keep regular forces continuously employed throughout the year if the greatest efficiency is to be expected from such forces.

Railroad earnings in many parts of the country are subject to highly seasonable fluctuations. Some railroads in the last half of the year will earn two-thirds or more of the annual revenue. This means that the first half of the year is lean and the last half fat and that corresponding fluctuations in operating expenses to keep step with the variations in gross revenues must necessarily be adjusted through maintenance expenditures.

The contentment of men employed on railroad maintenance work is greatly increased by surrounding them with healthful living conditions—sanitary section houses and yards, screened windows, well drained premises and a bright, tidy and cheerful house to live in. Some years ago our company inaugurated a plan to improve these conditions and a very great improvement in the morale of the forces has been observed. We would not think for a moment of returning to the former conditions.

To sum up, raising the standard of maintenance forces has been and can be accomplished by raising the standard of supervision and by the creation of conditions for the laborers which will stimulate them to effective effort in the hope of qualifying themselves for promotion, while enjoying steady and continuous employment under working and living conditions which make for contentment. This belongs to report on roadmaster's convention.

How to Inspect and Identify Ties for Renewal

In general, the tie inspection is made late in the fall of each year after the tracks have been brought up to good riding condition for the winter. The ties are marked with paint or are adze-marked to indicate that they are to be removed the following year. At some points the condition of the tie as to fitness for service is ascertained by sounding with a spiking maul or the butt end of a tamping pick, but if the inspection takes place during the winter months this test for soundness of timber is uncertain. Additional inspection must be made to determine not only the ability of the tie to hold the spike but also its fitness to withstand tamping. This inspection can be secured by using a sharp pointed instrument with which the timber underneath the tie plate or the rail can be tested. A record should be maintained of the ties inspected in each track between mile posts, so that an accurate check may be made when actual renewals are made.

On some roads the opinion prevails that a tie or timber inspector should accompany the section foreman on his inspection in order to eliminate the possibility of removing ties which might give further service. The committee feels, however, that the addtion of a tie or timber inspector is not justified when his salary and necessary expenses are taken into consideration, as the inspection is made from surface indications, whereas the real question of tie removals arises when the actual track work is being performed. When such seasonal track work is under way,

the section foreman should be held responsible for all ties removed from track under their jurisdiction. The ties removed from the track should be left on the right-of-way for a short time so that the supervisor may thoroughly inspect them, so that ties removed which will give further service may be replaced in track and the foreman responsible for their removal properly disciplined.

Committee: J. G. Hartley, division engineer, Penna., chairman; Dan Foley, inspector of maintenance of way, M. C.; C. H. Schriers, A., T. & S. F.; J. E. Bone, roadmaster, M. P.; D. K. Newmyer, roadmaster, S. P.; Henry Ferguson, superintendent of track, C. N.; C. J. Franklin, assistant to general roadmaster, C., M. & St. P.; J. Seaburg, roadmaster, N. P.; George J. Daly, supervisor, Erie; J. P. Corcoran, roadmaster, C. & A.; J. W. Powers, supervisor, N. Y. C., and W. T. Hanley, division engineer, Penna.

Track Supply Association's Exhibit

The use of the Kansas City Municipal Convention hall afforded ample facilities for the exhibit of the Track Supply Association, 59 firms presenting displays. The officers of the association for the past year were: Acting president, L. C. Ryan (Oxweld Railroad Service Company), Chicago; secretary-treasurer, W. C. Kidd (Ramapo-Ajax Corporation), Hillburn, N. Y.; directors, Alex Chapman (The Rail Joint Company), Chicago; J. H. Horn (National Lock Washer Company), Newark, N. J.; F. McAllister (Kalamazoo Railway Supply Company), Kalamazoo, Mich.; W. W. Glosser (Verona Tool Works), Pittsburgh, Pa.; advisory directors, E. T. Howson, (*Railway Age*) Chicago; R. A. Van Houton (Sellers Manufacturing Company), Chicago; ex-officio director, J. J. Cozzens (Union Switch & Signal Company), New York; honorary director, W. F. Muff, president of the Roadmasters' and Maintenance of Way Association, Newton, Kan.

The list of firms exhibiting and the character of their exhibits follows:

List of Exhibitors

Air Reduction Sales Company, New York; oxygen, acetylene and carbide cutting and welding apparatus, lamp carbide, railroad carbide lamps and regulators; R. T. Peabody, T. M. Hamer and C. A. Daley.

American Chain Company, Inc., Bridgeport, Conn.; guard rail clamps, replacers, rail benders, one-piece guard rail, compromise joints; J. J. O'Connell.

American Hoist & Derrick Company, St. Paul, Minn.; illustrations and photographs of ditchers and caterpillar shovels; Miss H. M. Hoeller, W. B. Maurer and D. L. O'Brien.

American Steel & Wire Company, Chicago; fencing and posts; L. B. Shanahan, J. W. Collins, E. R. Waterman and J. M. Hollaway.

American Valve & Meter Company, Cincinnati, Ohio; interlocking and gearless switch stands and safety locking device; J. T. McGarry, D. J. Higgins and F. C. Anderson.

Balkwill Manganese Crossing Company, Cleveland, Ohio; model of an articulated cast manganese steel crossing; S. Balkwill, T. P. Cagwin and E. D. Rogers.

Bethlehem Steel Company, Bethlehem, Pa.; switch stands, guard rail, hook flange and gage rods; N. E. Salsich, Rex Deghuee, R. S. Malone and F. Huffman.

Boston & Maine, Boston, Mass.; working model of Mount Washington Railway; E. S. Jones.

Buda Company, Chicago; section motor car, switch stand, tool grinder, motor car wheels, track drill, track jack and track liner; G. W. Hoover, A. L. Bliss and J. H. Weare.

Carbic Manufacturing Company, Duluth, Minn.; carbic light, acetylene welding and cutting apparatus and carbic cakes; R. C. Duncan and V. A. Leaveau.

Chausse Oil Burner Company, Elkhart, Ind.; oil burning switch heaters, and kerosene thawing and heating torches; W. McK. White.

Chicago Malleable Castings Company, Chicago; rail anchor tie plates, anti-creepers and literature on bumping posts; Warren Osborn.

Chipman Chemical Engineering Company, Inc., Bound Brook, N. J.; T. B. Bowman.

Cleveland Railway Supply Company, Cleveland, Ohio; flangeway guard, foot guard, guard rails, switch stands and photographs of locomotive cranes; F. A. Peck, W. H. Neeson and H. P. Blum.

Creepcheck Company, Inc., Hoboken, N. J.; creepchecks; Frank J. Reagan.

Crerar Adams Company, Chicago; hand and power bonding drills, track drill, rail saw, die starter, jacks, track liners and handles; Russell Wallace and W. I. Clock.

Duff Manufacturing Company, Pittsburgh, Pa.; track, journal and bridge jacks; Earl E. Thuim.

Fairbanks, Morse & Co., Chicago; section cars and motor car wind shield; F. M. Condit, P. H. Gilleland, G. W. Lewis, C. H. Wilson, E. C. Golladay, B. S. Spaulding, C. B. O'Neil, A. J. Olson, H. L. Hilleary, G. Howard, C. G. Mahana, George Johnson, E. E. Pendray and Charles Gross.

Fairmont Railways Motors, Inc., Fairmont, Minn.; section car, light inspection car; motor car engine and motor car two-speed transmission; H. E. Wade, W. F. Kasper, W. D. Brooks, L. R. Payton, J. T. McMahon and E. R. Mason.

J. R. Fleming & Son Company, Scranton, Pa.; switch point protector; A. J. Fleming and J. A. Moffitt.

Grip Nut Company, Chicago; grip nuts; J. B. Whitenack.

Gustin-Bacon Manufacturing Co., Kansas City, Mo.; Grant track liner; Glenn R. Miller.

Hackmann Railway Supply Company, Chicago; track liner; Frederick Hackman, Joseph J. Franzen and Arthur Schmidt.

Hayes Track Appliance Company, Richmond, Ind.; derail and operating stand, light portable derail and bumping post; Herbert J. Mayer, S. W. Hayes, Sterling P. Reid and E. L. Ruby.

Hubbard & Company, Pittsburgh, Pa.; shovels, track tools and nut locks; J. S. Wincrantz.

Ingersoll Rand Company, New York City; pneumatic tie tamper, pneumatic rail drill, pneumatic nutting machine, pneumatic shovel, wood boring tool, bonding drill, concrete breaker, rock drill, riveting hammer and chipper; W. H. Armstrong, E. F. Kultchar and T. H. Weigand.

O. F. Jordan Company, East Chicago, Ind.; moving pictures; A. L. Greenabaum, J. C. Forbes, E. J. Van Patten and A. W. Banton.

Kalamazoo Railway Supply Company, Kalamazoo, Mich.; motor car, combination track gage and level; Frank E. McAllister, L. W. Boswell and R. E. Keller.

Kansas City Oxygen Gas Company, Kansas City, Mo.; welding and cutting equipment; R. E. Koons and D. L. Kelly.

Koppel Industrial Car & Equipment Company, Koppel, Pa.; photographs of dump cars; W. H. Redman and O. E. Kantenwein.

Lundie Engineering Corporation, New York City; tie plates, rail anchors; L. B. Armstrong and George W. Nibbe.

Maintenance Equipment Company, Chicago; friction car stop, track tools, moving pictures of rail layer, skeletonizing machine, Jackson power ballaster, and power ballast screen, and combination tie plate; J. A. Roche, C. Woodings and Cyril Woodings.

Mechanical Manufacturing Company, Chicago; bumping post; H. E. Johnson.

Mudge & Company, Chicago; motor car; Albert C. Force, Robert D. Sinclair, Clyde P. Benning, Frank DeBrun, F. C. Whitehouse, V. Pagett and Walter Ryser.

National Lock Washer Company, Newark, N. J.; spring washers; W. H. Hillary and R. L. Cairncross.

Northwestern Motor Company, Eau Claire, Wis.; heavy duty motor car; F. W. Anderson, A. H. Nelson and William J. Roehl.

Oxweld Railroad Service Company, Chicago; welding apparatus; L. C. Ryan, W. H. Kofmehl, C. A. Bloom, E. M. Collins, A. S. Jones and F. J. Lynch.

P. & M. Company, Chicago; anti-creepers and bond wire protectors; D. T. Hallberg, P. H. Hamilton, J. E. Mahoney, G. E. Webster, R. D. Hawley and J. J. Gallagher.

Pocket List of Railroad Officials, New York City; copies of publication; B. J. Wilson.

Positive Rail Anchor Company, Marion, Ind.; girder type guard rail, rail anchors, rail braces, guard rail plates and braces and tie plates; A. H. Told and L. C. Ferguson.

Q. & C. Company, New York City; one piece manganese guard rail, guard rail clamp, compromise joint, derails; J. L. Terry, E. R. Packer, R. J. McComb and L. Thomas.

Rail Joint Company, New York City; insulated joints, compromise joints, standard joints, track liner and motion pictures; Alex Chapman, C. B. Griffin, H. C. Hickey, J. N. Meade, C. A. Disbrow, Charles Jenkinson and M. Markley.

Railroad Supply Company, Chicago; tie plates; W. S. Boyce,

R. E. Bell, George T. Cook, J. W. Jordan, George T. Willard and R. S. O'Brien.

Railway Engineering and Maintenance, Chicago; copies of Railway Engineering and Maintenance, *Railway Age*, Railway Electrical Engineer, Railway Signaling, Railway Mechanical Engineer, Maintenance of Way Cyclopedia, Roadway and Track, Simplified Curve and Switch Work; E. T. Howson, F. C. Koch, W. S. Lacher, J. M. Rutherford and H. Porch.

Railway Review, Chicago; copies of publication; J. A. Walsh and G. E. Boyd.

Ramapo Ajax Corporation, Hillburn, N. Y.; automatic switch stand, manganese crossing, double shoulder switch plate, manganese guard rail, guard rail clamp, forged braces; W. C. Kidd, J. B. Strong, J. E. Davidson, T. E. Akers, Dickson Fairback, W. J. Fairback, J. V. Houston, Paul Hoffmann, D. E. Hilton, R. W. Payne and George M. Cooper.

Reade Manufacturing Company, Jersey City, N. J.; model of chemical weed killing machine; Charles H. Reade and Ralph W. Pritchard.

Reliance Manufacturing Company, Massillon, Ohio; spring washers; H. J. McGinn, A. C. Rule, R. Shireman, E. W. Hart, W. H. Crawford and E. C. Gross.

Sellers Manufacturing Company, Chicago; wrought iron tie plates; G. M. Hogan, R. J. Platt and R. A. Van Houten.

Sinning Track Liner Company, Ramsey, Ill.; track liner; F. R. Sinning, J. A. Moffit, Frank J. Reagan and A. F. McCool.

Skelton Shovel Co., Inc., Dunkirk, N. Y.; track shovels; E. W. McCarty and H. C. Branahl.

Templeton, Kenly & Co., Ltd., Chicago; track jacks, bridge jacks and emergency jacks; James L. Crowley, George L. Mayer and W. B. Templeton.

Union Switch & Signal Company, Swissvale, Pa.; insulated rail joints; J. J. Cozzens.

Verona Tool Works, Pittsburgh, Pa.; track tools, nut locks, track jacks, rail joint springs, rail anchors, track liners and circuit bonds; W. W. Glosser, W. C. Dawkins and C. Laessig.

Warren Tool & Forge Company, Warren, Ohio; adzes, claw-bars, lining bars, picks, spike mawls, sledges, hammers, track chisels, wrenches; M. J. Konold and H. C. Mull.

Western Wheeled Scraper Company, Aurora, Ill.; model of automatic side dump car with apron and moving pictures; H. B. Bushnell, Jess Mossgrove and P. F. Smith.

Woolery Machine Company, Minneapolis, Minn.; motor car engines and parts; H. E. Woolery and C. C. Tambornino.

Wyoming Shovel Works, Wyoming, Pa.; track shovels, spades, scoops, scuffle hoes and picks; H. T. Potter, E. L. Ruby, Stanley H. Smith and M. S. Hendrickson.

Non-Exhibiting Members

Barber Asphalt Company, Philadelphia, Pa.
Cleveland Frog & Crossing Company, Cleveland, Ohio.
Morden Frog & Crossing Works, Chicago.
National Malleable & Steel Castings Company, Cleveland, Ohio.
Pettibone-Mulliken Company, Chicago.
Railway Purchases and Stores, Chicago.
St. Louis Frog & Switch Company, St. Louis, Mo.
William Wharton, Jr,. & Co., Easton, Pa.

At the annual meeting of the Track Supply Association on Wednesday, the following officers were elected for the ensuing year: President, D. C. Ryan, Oxweld Railroad Service Company, Chicago; vice-president, A. H. Told, Positive Rail Anchor Company, Marion, Ind., secretary-treasurer, W. C. Kidd, Ramapo Ajax Corporation, Hillburn, N. Y.; members of executive committee, L. P. Shanahan, American Steel and Wire Company, Chicago; J. Howard Horn, National Lock Washer Company, Newark, N. J.; W. W. Glosser, Verona Tool Works, Pittsburgh, Pa., and F. C. McAllister, Kalamazoo Railway Supply Company, Kalamazoo, Mich.

Underwood & Underwood

Nenana River Canyon, Alaska, Showing Government Railroad

General News Department

The Thirteenth National Foreign Trade Convention will be held at Charleston, S. C., on April 28-30, 1926.

The employees of the Paris (Ky.) shops of the Louisville & Nashville on July 31 completed a full year of work without a reportable injury to any employee.

The shops of the Delaware, Lackawanna & Western have been ordered to work only four days a week, the amount of car repair work having fallen off because of the strike in the anthracite mines. About 2,500 men are affected.

The Interstate Commerce Commission, on petition of the New York Central for the omission of the Pittsburgh & Lake Erie and the Boston & Albany from the provisions of its second train control order (January 14, 1924,) has granted the petition insofar as the Pittsburgh & Lake Erie is concerned but has denied it as to the Boston & Albany.

Preliminary plans have been made by the Canadian railways for the entertainment of delegates to the convention of the American Association of Railroad Superintendents, which will meet in Montreal the third week in June next year. J. K. Savage, general superintendent of transportation, C. P. R., is chairman, and C. L. Harris, assistant to the chief of transportation, vice-chairman of the committee on arrangements.

The seventy-third anniversary celebration of the Chicago, Rock Island & Pacific, to be held in Kansas City, Mo., on October 12 and 13, will be the occasion for the gathering of representatives from all divisions of the system. An attendance of 2,000 employees and officers is expected, including a large number of pensioners and members of the 25-year club; officers and employees who have been in the service of the Rock Island for 25 years or more.

In an account of the initial long engine run on the New York Central without change of locomotive between Harmon, N. Y., and Chicago, which was published in last week's issue, it was stated that engine 3334 left Harmon on the Lake Shore Limited on Thursday afternoon, September 11. This should have been Septembed 10. The locomotive left Chicago for the return trip on Saturday, September 12, at 5:30 p. m., central standard time, completing the trip to Harmon Sunday afternoon at 4:22 p. m., eastern standard time.

The Railway Business Women's Association of the Twin Cities was organized in 1921 by several women employees of railroads, at which time meetings were held from time to time at the homes of the members. In the following year the association elected officers, the first president being Emma S. Redel, assistant secretary of the Minneapolis & St. Louis, who was also one of the founders. The association has grown in membership until at the present time it embraces 750 employees of railroads in Minneapolis and St. Paul. The purpose of the club was to promote a friendly relation among employees and further social activities. At present courses are given in singing, domestic art, drawing, fancy dancing and other subjects.

Two men are on trial in Los Angeles, Cal., on charges of operating a confidence game by means of a fake railroad merger. In its opening statement the prosecution said that it expected to prove that the defendants had secured money from investors on the basis of their alleged claim that they would collect a commission of $200,000,000 on a merger involving $6,000,000,000. A witness, who had contributed $8,000 to the defendants, testified that he had been promised a return of 10 for 1 on his investment. The fake merger was to include the Western Pacific, the Denver & Rio Grande Western, the Missouri Pacific and a number of other roads. The witness said he was told by the defendants that the approval of the Interstate Commerce Commission had been assured.

Southern Pacific Tunnel Blocked

Tunnel No. 4 in Miravalles Canyon about 20 miles south of Tepic on the new extension of the Southern Pacific of Mexico, was damaged by a landslide on August 22. About 5,000 yards of material slid into the approach cut, burying the south portal. A large rock weighing about 200 tons settled four feet into the portal. This tunnel had been opened in February, 1924. Contractors were preparing to build a masonry portal and lining to protect against possible movement but the masonry work had not been completed.

Railway Business Women's Association Entertained

The Western Railway Club, Chicago, held ladies' night at the Hotel Sherman on September 21. The evening was devoted to the entertainment of members of the Railway Business Women's Association of the Twin Cities, Minn., and consisted of a dinner followed by a dance. The speakers at the dinner were Mrs. Nellie M. Severance, president, and Miss Alice R. Kellar, vice-president of the association. Fourteen members of the association were present and these were given a luncheon at the Illinois Athletic Club on the same day.

Locomotives Inspected

During August 6,604 locomotives were inspected by the Bureau of Locomotive Inspection of the Interstate Commerce Commission, according to its monthly report to the President on the condition of railroad equipment. Of these 2,689, or 40 per cent were found defective and 275 were ordered out of service. During the same month 121,328 freight cars were inspected, of which 3.3 per cent were found defective, and 2,421 passenger cars, of which 27 were found defective. During the month 17 cases, involving 32 violations of the safety appliance acts, were transmitted to various United States attorneys for prosecution.

Alberta Offers to Sell Edmonton, Dunvegan & British Columbia to C. P. R.

At a conference held in Edmonton, Alberta, last week between Premier Herbert Greenfield and President E. W. Beatty of the Canadia Pacific the latter was handed by the Alberta government a proposal whereby the Canadian Pacific purchase outright from the Alberta government the Edmonton, Dunvegan & British Columbia, which runs from Edmonton to the Peace river country. Mr. Beatty promised an early reply as to the willingness of his road to buy the government line. If the Canadian Pacific turns down this proposal the Alberta government will then consider turning over the Dunvegan line to the Canadian National for operation.

National Association of Railroad Commissioners

The National Association of Railroad and Utilities Commissioners announces its 37th annual convention to be held at the Hotel Mayflower, Connecticut Avenue, Washington, D. C., beginning on October 13 and to hold, probably, to and including the 16th, with perhaps one or two night sessions. William D. B. Ainey, Harrisburg, Pa., president of the association, calling attention to the changes during the past year in matters related to the duties of state commissioners, and citing important court decisions affecting state rights, calls upon every state commission to have at least one member present at the Washington meeting. Mr. Ainey says that addresses are expected from Herbert Hoover, secretary of commerce, C. B. Aitchison, chairman of the Interstate Commerce Commission, Senator E. D. Smith of South Carolina, Chairman William Prendergast of the New York state public service commission, and others. The program for the meeting is to be issued shortly by James B. Walker, secretary, New York City.

Freight Operating Statistics of Large Steam Roads—Selected Items July, 1925,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotive and tender	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line daily: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany 1925	404	251,016	273,191	32,752	5,242	67.8	272,805	106,255	127	15	10.8	11
1924	594	248,601	264,313	25,783	4,695	65.0	251,107	97,077	128	19	12.9	...
Boston & Maine 1925	2,319	512,858	588,350	58,706	12,716	70.5	638,671	262,332	349	95	21.3	49
1924	2,366	492,790	560,688	53,984	11,566	69.1	586,145	238,117	317	144	31.2	37
N. Y., New H. & Hartf. 1925	1,892	507,947	530,784	38,386	13,974	68.3	720,892	295,036	287	59	17.1	29
1924	1,960	489,671	515,206	31,543	12,622	67.2	653,431	266,410	309	65	17.3	36
Great Lakes Region:												
Delaware & Hudson 1925	875	398,686	538,082	55,776	10,692	64.9	691,590	349,698	247	40	14.0	73
1924	888	355,657	477,621	40,273	9,304	63.5	593,536	291,264	254	32	11.2	80
Del., Lack. & Western 1925	993	570,926	672,507	85,550	17,687	69.6	992,269	451,067	291	58	16.7	44
1924	993	563,396	583,892	79,588	15,341	67.9	867,368	383,525	300	63	17.3	44
Erie (inc. Chic. & Erie) 1925	2,325	921,884	1,019,625	100,112	34,989	65.6	2,100,663	930,716	616	111	15.3	203
1924	2,325	886,003	989,387	106,747	32,108	64.9	1,932,814	843,748	662	102	13.4	187
Lehigh Valley 1925	1,357	596,231	657,495	75,409	18,354	66.3	1,089,343	504,580	429	84	16.3	91
1924	1,357	566,051	619,455	60,999	16,598	67.2	986,627	465,216	468	81	14.7	135
Michigan Central 1925	1,826	554,324	571,783	17,016	19,155	61.4	1,035,988	370,226	313	41	11.7	117
1924	1,827	526,037	542,790	22,466	16,756	60.7	926,486	329,358	295	60	16.9	93
New York Central 1925	6,478	1,927,152	2,152,334	147,942	71,031	63.4	4,315,825	1,893,631	1,194	351	22.7	368
1924	6,447	1,765,976	1,997,670	134,552	63,316	61.8	3,785,492	1,608,870	1,243	397	24.2	446
New York, Chic. & St. L. 1925	1,669	618,151	627,277	5,087	19,287	65.1	1,058,765	410,508	241	63	20.8	57
1924	1,669	589,029	600,593	6,875	17,113	62.3	956,632	358,055	260	55	17.4	74
Pere Marquette 1925	2,198	384,427	395,305	7,997	9,046	63.1	517,247	224,509	187	22	10.4	34
1924	2,227	357,769	369,919	9,822	8,680	64.4	490,964	221,280	190	22	10.3	36
Pitts. & Lake Erie 1925	231	119,216	121,421	1,105	4,078	64.7	313,176	181,809	72	19	20.7	32
1924	231	105,204	108,827	1,036	3,440	64.3	270,009	163,099	65	25	27.4	18
Wabash 1925	2,497	659,010	686,450	12,122	21,637	68.5	1,175,447	483,448	328	63	16.0	85
1924	2,459	582,235	607,332	9,530	17,787	67.0	985,122	405,067	309	52	14.4	68
Central Eastern Region:												
Baltimore & Ohio 1925	5,196	1,852,773	2,154,936	165,279	54,732	64.0	3,510,907	1,711,763	1,000	263	20.8	120
1924	5,207	1,697,280	1,925,379	152,838	46,701	63.2	2,896,484	1,376,357	1,002	309	23.6	222
Central of New Jersey 1925	691	295,478	324,684	39,768	7,511	59.9	489,386	236,049	243	34	12.1	38
1924	692	280,836	306,858	34,776	6,730	59.5	441,076	209,339	237	41	14.9	38
Chicago & Eastern Ill. 1925	945	229,259	229,558	3,550	6,446	64.3	370,435	167,330	142	26	15.2	71
1924	945	208,737	209,844	2,791	5,591	66.8	314,829	147,287	128	35	21.2	54
Clev., Cin., Chic. & St. L. 1925	2,381	706,884	745,700	11,312	22,252	61.5	1,426,395	658,691	350	77	18.0	63
1924	2,380	632,299	667,002	12,210	19,082	60.1	1,210,367	554,461	327	106	24.4	66
Elgin, Joliet & Eastern 1925	460	118,448	122,721	3,956	3,554	65.0	266,679	141,394	72	19	21.2	2
1924	460	85,247	88,991	2,327	2,530	65.9	173,884	97,642	88	11	11.1	21
Long Island 1925	393	48,205	53,561	13,530	629	57.5	40,014	15,588	43	12	21.7	...
1924	393	45,517	49,525	8,220	545	56.6	33,735	12,679	41	15	26.9	2
Pennsylvania System 1925	10,877	4,644,708	5,008,513	367,366	133,932	64.0	8,775,300	4,149,858	2,597	735	22.1	292
1924	10,942	4,341,447	4,652,126	320,214	120,437	63.8	7,788,371	3,642,517	2,653	892	25.2	426
Reading 1925	1,132	632,130	693,231	67,607	16,649	61.1	1,148,950	588,748	395	76	16.1	106
1924	1,141	586,806	640,340	58,265	14,605	61.1	967,726	475,378	426	78	15.4	153
Pocahontas Region:												
Chesapeake & Ohio 1925	2,627	1,181,643	1,239,458	42,567	37,292	57.0	2,953,493	1,622,452	473	98	17.1	11
1924	2,555	1,000,115	1,063,788	32,814	30,024	57.5	2,366,392	1,283,718	439	94	17.6	19
Norfolk & Western 1925	2,231	837,786	1,016,545	29,639	27,694	59.4	2,259,935	1,224,050	598	67	10.1	161
1924	2,231	808,767	982,485	24,973	23,218	58.0	1,902,837	997,916	581	106	14.6	165
Southern Region:												
Atlantic Coast Line 1925	4,892	761,180	775,071	12,292	18,572	61.4	1,067,442	424,252	364	65	15.0	42
1924	4,865	747,831	756,329	12,887	17,061	61.2	921,243	354,419	391	60	13.2	72
Central of Georgia 1925	1,907	416,391	418,243	6,931	8,302	68.5	457,601	195,366	161	9	5.5	20
1924	1,907	373,152	377,903	7,970	7,406	68.0	389,216	154,063	145	16	10.0	2
I. C. (inc. Y. & M. V.) 1925	6,225	1,808,425	1,820,699	37,636	50,342	62.5	3,174,493	1,341,872	754	112	12.9	44
1924	6,197	1,600,121	1,615,608	35,073	43,844	60.5	2,771,007	1,131,300	752	125	14.2	88
Louisville & Nashville 1925	5,027	1,787,994	1,883,076	63,961	35,656	61.0	2,376,185	1,141,572	627	93	12.9	31
1924	5,026	1,603,037	1,700,082	62,119	30,643	62.9	1,930,235	909,601	592	109	15.5	61
Seaboard Air Line 1925	3,755	544,769	559,098	5,855	13,482	62.8	759,581	300,216	221	30	11.9	2
1924	3,547	524,592	545,226	6,354	11,768	64.5	636,948	236,083	245	29	10.5	16
Southern Ry 1925	6,840	1,527,608	1,564,845	36,914	35,990	67.2	1,938,941	781,126	858	106	11.0	63
1924	6,840	1,444,958	1,472,273	29,365	31,950	64.3	1,762,644	687,994	869	111	11.3	27
Northwestern Region:												
Chic. & North Western 1925	8,463	1,387,106	1,422,816	24,879	35,307	61.3	1,969,487	831,862	728	219	23.1	135
1924	8,463	1,427,660	1,475,597	20,120	32,909	60.8	1,906,264	740,710	821	233	22.1	126
Chic., Milw. & St. P. 1925	11,202	1,547,532	1,635,285	83,911	45,234	65.2	2,559,371	1,106,402	924	172	15.7	164
1924	10,983	1,392,838	1,435,581	65,791	38,683	63.7	2,174,638	926,421	949	162	14.6	147
Chic., St. P., Minn. & Om. 1925	1,726	299,806	319,584	13,946	6,074	69.0	320,300	129,956	161	39	19.6	8
1924	1,726	295,308	326,219	12,877	5,797	68.1	310,289	126,748	168	35	17.3	1
Great Northern 1925	8,253	799,240	824,486	40,571	28,220	64.0	1,706,885	820,001	565	174	23.5	99
1924	8,251	714,666	733,192	31,672	24,561	65.0	1,495,553	748,187	585	160	21.4	142
M., St. P. & S. Ste. M. 1925	4,372	518,238	528,484	4,513	13,269	68.9	680,254	296,896	295	47	13.8	30
1924	4,374	486,461	495,981	6,851	11,590	66.8	624,772	280,463	291	52	15.2	12
Northern Pacific 1925	6,524	800,408	838,284	47,582	24,246	68.0	1,352,578	575,029	515	171	24.9	101
1924	6,416	717,314	749,403	41,260	20,796	68.5	1,146,898	496,266	586	139	19.2	156
Oreg.-Wash. R. R. & Nav. 1925	2,175	182,650	194,433	16,949	5,022	68.0	282,562	122,946	134	23	14.8	13
1924	2,169	185,817	195,572	17,269	4,887	72.6	269,034	123,776	138	22	13.5	19
Central Western Region:												
Atch., Top. & S. Fe (incl. P. & S. F.) 1925	10,045	1,638,015	1,780,582	110,079	52,466	64.7	3,048,518	1,100,615	831	166	16.6	200
1924	9,979	1,572,022	1,676,138	82,544	46,455	65.4	2,716,196	1,021,753	822	146	15.1	203
Chicago & Alton 1925	1,022	307,322	346,207	3,973	7,844	61.7	474,970	180,839	136	22	14.1	32
1924	1,017	293,849	298,687	3,284	6,944	62.3	420,931	173,089	134	22	13.8	42
Chic., Burl. & Quincy 1925	9,338	1,412,183	1,465,776	62,182	41,460	64.4	2,424,105	1,110,808	821	180	18.0	94
1924	9,332	1,376,846	1,420,493	53,938	37,473	61.5	2,226,860	974,147	797	211	21.0	94
Chic., Rock I. & Pacific 1925	7,578	1,425,425	1,526,017	19,582	34,675	68.7	1,867,809	776,565	563	144	20.3	32
1924	7,595	1,536,569	1,562,917	13,262	35,351	63.1	2,041,104	828,525	614	177	22.4	29
Denver & R. G. Wn. 1925	2,577	213,243	256,867	47,384	5,922	71.8	337,996	161,460	257	44	14.5	76
1924	2,610	200,996	246,164	49,140	5,062	68.7	296,273	145,080	261	69	20.9	69
Oregon Short Line 1925	2,444	282,331	295,542	19,285	7,539	64.1	447,714	194,811	190	28	12.7	57
1924	2,374	298,216	311,644	19,709	7,627	65.1	452,902	197,655	195	27	12.2	54
Southern Pac. (Pac. Sys.) 1925	8,517	1,532,344	1,675,091	284,035	44,594	64.0	2,675,836	1,049,939	755	173	18.6	74
1924	8,515	1,473,687	1,609,455	233,923	41,795	61.8	2,568,296	975,192	751	195	20.6	97
Union Pacific 1925	3,688	901,752	918,966	53,313	32,403	59.4	1,941,515	655,407	468	76	14.0	201
1924	3,717	915,423	925,426	35,814	30,239	58.6	1,862,508	633,532	453	67	12.8	139
Southwestern Region:												
Gulf, Colo. & S. Fe 1925	1,897	303,812	313,601	6,283	8,670	61.3	556,737	242,844	108	26	19.6	9
1924	1,897	282,239	295,636	4,944	7,840	64.4	477,268	215,511	124	18	12.4	16
Mo.-Kans.-Tex. 1925	1,787	269,443	270,705	2,350	9,645	61.7	550,704	213,121	116	17	12.5	40
1924	1,787	236,424	236,704	9,322	8,171	62.7	457,971	182,258	141	43	23.3	64
Mo.-Kans.-Tex. of Tex. 1925	1,389	189,042	198,824	3,519	5,043	60.5	303,071	122,320	133	14	9.8	66
1924	1,389	182,450	190,664	2,262	4,640	62.9	268,675	110,072	100	23	18.8	30
Missouri Pacific 1925	7,278	1,386,361	1,431,047	41,608	37,289	64.8	2,189,600	969,503	558	96	14.7	17
1924	7,302	1,248,891	1,273,277	40,634	31,191	64.0	1,857,290	820,414	460	161	26.0	23
St. Louis-San Francisco 1925	4,683	844,923	870,916	14,533	19,736	62.6	1,152,444	470,694	416	78	15.8	35
1924	4,683	834,826	862,477	16,667	17,373	63.7	1,015,625	433,526	414	77	15.7	53
Southern Pacific Lines (in Tex. and La.)[1] 1925	4,434	666,040	667,548	5,198	14,930	64.7	864,863	361,731	260	69	21.0	35
1924	4,394	690,507	697,236	4,708	14,819	66.4	865,557	379,090	269	67	19.9	31
Texas & Pacific 1925	1,953	314,893	314,893	5,114	7,696	66.2	436,062	175,329	144	41	22.1	15
1924	1,953	292,043	292,043	4,324	7,905	62.7	417,714	166,115	159	38	19.5	30

[1]Includes Franklin & Abbeville, Galveston, Harrisburg & San Antonio, Houston & Shreveport, Houston & Texas Central, Houston East & West Texas, Iberia & Vermilion, Lake Charles & Northern, Louisiana Western, Morgan's La. & Tex. R. R. & S. S. Co., and Texas & New Orleans.

Compared with July, 1924, for Roads with Annual Operating Revenues Above $25,000,000.

Region, road and year	Average number of freight cars on line daily: Home	Foreign	Total	Per cent unserviceable	Stored	Gross tons per train, excluding locomotive and tender	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles including locomotive and tender	Locomotive miles per locomotive day
New England Region:													
Boston & Albany....1925	2,683	6,232	8,915	2.8	...	1,087	423	20.3	380	27.8	8,481	165	69.5
1924	2,711	4,859	7,570	5.2	...	1,010	390	20.7	414	30.8	7,949	189	63.4
Boston & Maine....1925	14,783	12,748	27,531	10.1	...	1,245	512	20.6	307	21.1	3,649	133	47.0
1924	15,122	13,969	29,091	12.4	...	1,189	483	20.6	264	18.5	3,247	140	43.1
N. Y., New H. & Hartf...1925	21,487	19,351	40,838	21.5	1,070	1,419	581	21.1	233	16.2	5,031	119	53.1
1924	22,900	17,400	40,300	19.6	977	1,334	544	21.1	213	15.0	4,386	135	47.2
Great Lakes Region:													
Delaware & Hudson....1925	8,815	6,702	15,517	9.0	...	1,735	877	32.7	726	34.2	12.889	159	66.8
1924	9,625	5,727	15,352	6.3	...	1,669	819	31.3	612	30.7	10,581	174	58.5
Del., Lack. & Western....1925	17,548	7,517	25,065	3.3	67	1,738	790	25.5	580	32.6	14,660	147	70.0
1924	19,700	6,574	26,274	3.8	1,650	1,723	762	25.0	471	27.7	12,465	149	59.0
Erie (inc. Chic. & Erie)..1925	38,692	19,170	57,862	7.8	12,535	2,279	1,010	26.6	519	29.7	12,911	114	49.7
1924	40,287	16,962	57,249	7.4	14,452	2,181	952	26.3	475	27.9	11,708	120	46.3
Lehigh Valley 1925	20,724	7,733	28,457	6.8	200	1,827	846	27.5	572	31.4	11,998	139	46.1
1924	24,596	8,021	32,617	6.5	1,096	1,743	822	28.0	460	24.4	11,063	157	40.0
Michigan Central 1925	17,537	17,175	34,712	4.4	2,229	1,869	668	19.3	344	29.0	6 541	103	53.7
1924	18,489	13,830	32,319	4.7	5,118	1,761	626	19.7	329	27.6	5,816	115	51.4
New York Central....1925	76,656	66,425	143,081	4.2	26,046	2,239	983	26.7	426	25.2	9,430	110	48.0
1924	76.260	61,584	137,844	5.5	27,331	2,144	911	25.4	376	24.0	8,050	114	41.9
New York, Chic. & St. L..1925	14,250	10,422	24,672	5.6	6,317	1,713	664	21.3	537	38.7	7,936	104	67.2
1924	13,346	9,446	22,792	5.0	4,122	1,624	608	20.9	506	38.8	6,922	107	62.3
Pere Marquette 1925	11,378	8,053	19,431	5.0	1,503	1,346	584	24.8	372	23.7	3,294	107	62.2
1924	11,133	8,674	19,807	6.0	1,861	1,372	619	25.5	360	22.0	3,205	113	58.0
Pitts. & Lake Erie....1925	15,810	6,337	22,147	5.9	1,657	2,627	1,525	44.6	265	9.2	25,338	65	43.3
1924	17,084	6,268	23,352	3.2	3,473	2,567	1,550	47.4	225	7.4	22,731	67	39.6
Wabash 1925	15,158	11,174	26,332	3.0	875	1,784	734	22.3	591	38.6	6,246	119	57.7
1924	14,318	8,524	22,842	3.4	1,305	1,692	696	22.8	572	37.4	5,313	129	55.1
Central Eastern Region:													
Baltimore & Ohio 1925	73,864	35,242	109,106	8.1	4,170	1,895	924	31.3	506	25.3	10,627	147	59.3
1924	75,768	28,364	104,132	10.8	11,405	1,707	811	29.5	426	22.9	8,527	158	51.1
Central of New Jersey....1925	18,468	10,784	29,252	5.1	2,992	1,656	799	31.4	260	13.8	11.021	157	42.4
1924	19,542	9,613	29,155	4.8	3,153	1,571	745	31.1	232	12.5	9,759	167	39.6
Chicago & Eastern Ill.....1925	15,272	4,170	19,442	16.4	2,473	1,616	730	26.0	277	16.6	5,711	128	44.8
1924	16,625	4,072	20,697	16.7	5,437	1,508	706	26.3	229	13.0	5,027	143	42.3
Clev., Cin., Chic. & St. L..1925	22,149	17,224	39,373	4.7	10,595	2,018	932	29.6	512	29.3	8,925	111	57.2
1924	18,664	16,466	35,130	6.3	4,646	1,914	877	29.1	482	28.8	7,515	114	50.7
Elgin, Joliet & Eastern....1925	10,151	6,759	16,910	7.9	975	2,251	1,194	39.8	270	10.4	9,920	112	44.9
1924	9,508	5,142	15,050	6.6	2,063	2,040	1,145	38.6	209	8.2	6,850	131	29.7
Long Island 1925	2,067	5,175	7,182	1.1	87	830	323	24.8	70	4.9	1,279	224	39.8
1924	1,825	4,452	6,277	0.9	159	741	279	23.3	65	4.9	1,040	272	33.0
Pennsylvania System 1925	216,451	82,832	299,283	11.6	29,184	1,889	893	31.0	447	22.5	12,308	121	52.1
1924	210.071	84,127	294,198	9.9	44,865	1,794	839	30.2	399	20.7	10,739	126	45.3
Reading 1925	26,278	14,119	40,397	2.4	2,927	1,818	931	35.4	470	21.8	16,783	152	52.2
1924	25,381	11,530	36,911	2.5	4,876	1,649	810	33.9	415	20.0	13,444	163	44.7
Pocahontas Region:													
Chesapeake & Ohio....1925	30,597	10,905	41,502	4.3	1,318	2,499	1,373	43.5	1,260	50.8	19,921	97	72.5
1924	28,830	10,864	39,694	6.0	1,827	2,366	1,284	42.8	1,042	42.4	16,208	112	66.5
Norfolk & Western....1925	31,183	8,181	39,364	4.2	1,194	2.698	1,461	44.2	1,002	38.1	17,695	137	50.7
1924	29,976	7,931	37,907	3.7	1,914	2,353	1,234	43.0	849	34.0	14,430	151	47.7
Southern Region:													
Atlantic Coast Line....1925	19,370	11,271	30.641	4.3	...	1,402	557	22.8	440	31.4	2,797	112	59.2
1924	20,330	10,349	30,679	5.3	...	1,232	474	20.8	367	29.0	2,350	122	55.1
Central of Georgia....1925	4,790	6,709	11,499	4.8	...	1,099	469	23.5	547	34.0	3,305	142	80.7
1924	4,936	6,595	11,531	5.3	...	1,043	413	20.8	431	30.5	2,606	149	77.3
I. C. (inc. Y. & M. V.)..1925	49.399	19.713	69,112	7.3	2,148	1,755	742	26.7	626	37.6	6,953	120	69.2
1924	48,338	17,968	66,306	7.1	2,574	1,732	707	25.8	550	35.2	5,888	121	60.8
Louisville & Nashville....1925	44,449	17,492	61,941	12.6	79	1,329	638	32.0	592	30.3	7,325	144	87.3
1924	43,879	16,194	60,073	12.4	105	1.204	567	29.7	486	26.0	5,838	156	81.2
Seaboard Air Line....1925	11.548	8.458	20,006	3.6	...	1,394	551	22.3	484	34.5	2,579	131	72.5
1924	10,245	7,493	17,738	7.0	...	1,214	450	20.1	429	33.2	2,147	140	65.1
Southern Ry....1925	41,813	19,313	61,126	4.9	...	1,269	511	21.7	411	28.2	3,684	154	53.6
1924	41,031	17,495	58,526	6.2	...	1,220	476	21.5	379	27.4	3,245	166	49.4
Northwestern Region:													
Chic. & North Western...1925	53,349	24,362	77,711	10.3	4,854	1,420	600	25.0	345	22.5	3,171	122	49.3
1924	50,839	24,028	74,867	10.0	...	1,335	519	22.5	319	23.3	2,823	136	45.8
Chic., Milw. & St. P.....1925	55,499	21,172	76,671	8.4	...	1,654	715	24.5	465	29.1	3,186	130	50.6
1924	56,948	20.764	77,712	7.1	...	1.561	665	23.9	383	25.1	2,721	138	43.6
Chic., St. P., Minn. & Om.1925	3,479	7,280	10,759	10.6	440	1,068	433	21.3	389	26.3	2,428	138	53.6
1924	3,759	8,878	12,637	8.1	731	1,051	429	21.9	323	21.7	2,369	126	54.0
Great Northern 1925	46,822	8,776	55,598	8.6	...	2,136	1,026	29.1	469	25.3	3,205	112	37.8
1924	48,830	7,484	56,314	10.4	...	2,093	1,047	30.5	424	21.4	2,925	112	33.1
M., St. P. & S. Ste. M...1925	20,509	5,936	26,445	7.4	2,660	1,313	573	22.4	361	23.4	2,191	104	50.3
1924	21,097	6,554	27,651	6.7	3,164	1,284	577	24.2	326	20.2	2,068	108	47.3
Northern Pacific 1925	38,494	7,371	45,865	6.5	3,975	1,690	718	23.7	403	24.9	2,843	130	41.6
1924	35,915	7,768	43,683	7.5	3,160	1,599	692	23.9	365	22.3	2,495	117	35.2
Oreg.-Wash. R. R. & Nav..1925	6,645	4,492	11,137	5.4	...	1,547	673	24.5	355	21.3	1,824	169	43.3
1924	5,481	4,319	9,800	4.7	...	1,448	666	25.3	407	22.2	1,841	186	43.1
Central Western Region:													
Atch., Top. & S. Fe (incl. 1925	61,053	16,112	77,165	6.8	16,189	1,861	672	21.0	458	33.8	3,535	114	61.2
P. & S. F.)..... 1924	56,977	13,878	70,855	6.8	11,585	1,728	650	22.0	465	32.3	3,303	120	58.7
Chicago & Alton....1925	10,153	4,392	14,545	5.2	4,000	1,546	588	23.1	400	28.1	5,708	145	71.5
1924	10.307	4,426	14,733	3.7	4.300	1,432	589	24.9	379	24.4	5,490	132	62.6
Chic., Burl. & Quincy....1925	56,136	16,856	72,992	7.5	3,403	1,717	787	26.8	489	28.4	3,837	127	49.2
1924	54,786	18,159	72,945	8.0	3,873	1,617	708	26.0	430	26.9	3,367	146	47.2
Chic., Rock I. & Pacific...1925	36,758	20,435	57,193	10.7	9,425	1,310	545	22.4	435	28.2	3,305	141	70.5
1924	36,359	20,146	56,505	11.3	8,349	1,328	539	23.4	465	31.6	3,519	146	64.3
Denver & R. G. Wn....1925	12,241	4,120	16,361	5.6	4,925	1,585	757	27.3	318	16.2	2,021	190	32.7
1924	13,572	3,220	16,792	6.9	5,328	1,474	722	28.7	278	14.1	1,793	190	28.9
Oregon Short Line....1925	8,547	4,269	12,816	6.9	...	1,586	690	25.8	488	29.4	2,571	122	46.8
1924	7,245	4,029	11,274	6.9	...	1,519	663	25.9	566	33.5	2,685	135	48.2
Southern Pac. (Pac. Sys.).1925	31,605	32.755	64,360	5.4	7,618	1.746	685	23.5	525	34.8	3,977	127	68.2
1924	28.221	30,459	58.680	6.0	4,992	1,743	662	23.4	535	37.0	3,694	129	62.9
Union Pacific 1925	20,725	10,761	31,486	10.7	...	2.153	727	20.2	669	55.7	5,733	109	57.6
1924	22,354	10,116	32,470	9.9	...	2,035	692	21.0	629	51.3	5,499	122	59.7
Southwestern Region:													
Gulf, Colo. & S. Fe....1925	7,978	4,330	12,308	5.0	1,217	1,833	799	28.0	634	36.9	4.129	100	76.8
1924	7,952	4,625	12.577	4.6	237	1,691	764	27.5	553	31.2	3,665	105	68.5
Mo.-Kans.-Tex. 1925	8,361	4,227	12,588	4.8	2,456	2,044	791	22.1	540	39.7	3,847	91	66.3
1924	10,883	5,546	16,429	3.6	3,850	1,937	771	22.3	353	25.3	3,290	97	43.2
Mo.-Kans.-Tex. of Tex....1925	291	11,617	11,908	8.9	2,707	1,603	647	24.3	313	21.7	2.840	102	44.3
1924	329	11,072	11,401	11.8	3,376	1,473	603	23.7	297	20.1	2,556	109	50.8
Missouri Pacific 1925	31,965	19.045	51,010	8.9	1,100	1,579	693	25.8	606	36.3	4,257	123	72.6
1924	29,954	18.274	48.228	8.3	...	1,487	657	26.3	549	32.6	3,624	132	68.3
St. Louis-San Francisco...1925	21.074	11,559	32,633	4.5	1,195	1,364	557	23.8	464	31.0	3.242	143	57.8
1924	22.269	10.586	32,855	5.0	1,970	1,217	519	25.0	426	26.7	2,986	154	57.7
Southern Pacific Lines (in 1925	10,890	14.687	25,577	8.3	4,361	1,299	543	24.2	453	29.0	2,632	112	65.8
Tex. and La.)[1].....1924	10 528	15.802	26.330	6.2	3,029	1,254	549	25.6	464	27.2	2,782	117	67.4
Texas & Pacific....1925	6,663	5,717	12,380	7.4	...	1,385	557	22.8	412	28.3	2,896	114	55.7
1924	6,394	5.094	11,488	11.4	...	1,430	569	23.7	415	29.2	2,744	120	48.4

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Labor Executives Oppose Group Insurance

Resolutions condemning "employers' group insurance schemes" as a "menace to the worker" were adopted at a recent meeting of the chief executives of the associated railroad labor organizations, at Washington, at which President Robertson, of the Brotherhood of Locomotive Firemen and Enginemen, and President Manion, of the Order of Railroad Telegraphers, were authorized "to make an investigation, with a view to determining if the actions of the carriers are in violation of the charters of the carriers, the transportation act, or other federal or state laws" and to "request hearings before and investigations by the Interstate Commerce Commission or proper authorities as to the right and propriety of common carriers to conduct such insurance activities, spend the public's money in furtherance of such schemes, and to charge such expenditures to operating or other accounts of the carriers."

Santa Fe Protests Valuation

The Atchison, Topeka & Santa Fe is preparing a formal protest against the valuation placed upon it by the Interstate Commerce Commission on account of large discrepancies in some of the most important points of the valuation compared with the company's figures. According to the commission's finding, $391,162,318 was the value of the property owned on June 30, 1916, and $476,120,978 was that of property used on that date. Discussing the commission's findings in an interview with newspapermen, President W. B. Storey, of the Santa Fe, said that in the nine years since 1916 the management has actually expended on the property $232,000,000. With this amount and with a fair allowance for the increases in prices since the date of the commission's figures, which it is believed should be made, the Santa Fe claims a true valuation today of approximately $1,000,000,000.

Damage Claim Fraud Checked

The intervention of the Chicago, Rock Island & Pacific in a suit for personal damages brought against the Colorado & Southern by a former employee of the road, resulted in the dismissal of the suit and the arrest of the former employee on a charge of fraud. The plaintiff, who had been a brakeman, had sued for $100,000 damags. The trial was in progress in the federal court at Denver, Colo., when a Kansas City attorney intervened and testified that in 1907 he had represented this man in a damage suit against the Rock Island in which his client was awarded $1,000 damages. After the trial, the attorney testified, the man had boasted that he had not been injured at all. After the claim agent of the Rock Island testified that he had paid the damages in the earlier case, the court stopped the trial and turned the plaintiff over to the United States marshal.

Santa Fe Shows Progress in Past Decade

"Ten Santa Fe Years" is the title of an advertisement which is being published by the Santa Fe in newspapers along its lines, tracing the growth of the road in ten years and what that growth means to its patrons; and showing the improvement in service at reasonable rates due to efficiency of operation and the millions spent for improvements.

"Wise economies and the co-operation of patrons and employees have helped to build up a great transportation machine which is at your instant service for a most reasonable charge. In these ten years the Santa Fe and the southwest have grown together. The Santa Fe's growth has been not only in mileage and facilities but also in ability to serve patrons better.

"This decade has been a period of expansion. In it the Santa Fe's operated mileage has increased 922 miles. Each locomotive now hauls 54 per cent more. Nearly 14,000 more freight cars are available. There has been an increase of 15 per cent in passengers carried one mile and 79 per cent in revenue tons carried one mile.

"Expenses of maintenance of the road have increased 121 per cent, or $1,700 per mile. Maintenance of locomotives showed an upward trend of 137 per cent or $6,141 each per annum, passenger cars 85 per cent or $999 a car, freight cars 175 per cent or $161 per car. All operating expenses combined jumped 114 per cent. Taxes advanced for each mile of track 196 per cent or $993. Total taxes in 1924 were $17,730,961 or $1,499 per mile.

"Santa Fe freight rates have gone up only 28 per cent and passenger fares only 47 per cent. The average load of freight carried by each car has increased 3.12 tons or 14 per cent. Average freight loading per freight train has increased 226 tons or 54 per cent."

N. Y. C. and P. R. R. Baseball Champions to Play in Rochester, N. Y.

The baseball team which wins the championship of the New York Central Lines will play the team which wins the championship of the Pennsylvania System at Rochester, N. Y., on October 6. The New York Central championship lies between the Indiana Harbor Belt team and that representing the Main Line enginehouse at Buffalo, N. Y.

The Rochester Chamber of Commerce is co-operating with the railroads in the plans for the event and the mayor and other prominent citizens will be in attendance. In all about 15,000 persons are expected to see the contest. The game will be called at 2 p. m. at the International League grounds. In the evening a banquet will be tendered by the two railroads to the champion team and to the runner-up of each railroad and the William H. Vanderbilt cup, the New York Central trophy, will be presented to the team which has won the N. Y. C. championship.

Railroad Service Killed by Excessive Taxes

Thornton Alexander, counsel for the Boston & Maine, arguing before the New Hampshire State Tax Commission, at Concord on September 15, for a reduction of the railroad's taxes in that state, told the commissioners that the aggregate of tax payments made by the road in New Hampshire in the last ten years has been $7,549,962; "a material factor contributing to the necessity of seeking abandonment of certain unprofitable branch lines." In the ten years covered by those tax payments the road has failed by $33,207,882 to meet income requirements prior to dividends.

"There must be tax relief if the Boston & Maine is not to be forced to seek abandonment of all such unprofitable branch lines," said Mr. Alexander. The road has been taxed for the privilege of supplying service on lines of light traffic at great cost.

The Boston & Maine paid taxes of $854,000 last year to the State of New Hampshire. This constituted 65 per cent of the entire amount which the road paid in all state taxes, although only 35 per cent of its mileage is in New Hampshire. The trackage in New Hampshire would not bring in that amount of net earnings, the speaker declared.

Chief Interchange Inspectors' Convention

The twenty-fourth annual convention of the Chief Interchange Car Inspectors' and Car Foremen's Association of America was called to order by President C. M. Hitch at the Hotel Sherman, Chicago, September 22. At the opening session the members were welcomed by F. H. Hammill, executive vice-president, Chicago, Rock Island & Pacific, and the address of President C. M. Hitch followed. Several committee reports were presented and L. R. Christy, general car inspector, Missouri Pacific, read a paper on lubrication which brought out the details of methods followed by the Missouri Pacific in the reclamation of packing. The afternoon session was entirely taken up with the presentation of the following papers: "Heavy Repairs Known as Class Work," by F. A. Starr, general car inspector, C. & O.; "A. R. A. Billing and Preparation of Original Records, Repair Cards, Etc.," by L. Martin, chief accountant, A. R. A. Bureau, B. & O., and "Prevention of Transfers and Claims Arising from Transfers," by F. S. Cheadle, chief car inspector, R. F. & P. The second day of the convention was devoted to a discussion of A. R. A. rules of interchange and the report of the Committee on Transfer of Cars. The report of the Question Box Committee was made at the final session.

Senator Watson Looks for Voluntary Consolidations

Senator James E. Watson of Indiana, chairman of the Senate committee on interstate commerce, told newspaper men on September 23, after a conference with the President, that prospects for voluntary consolidations of railroads in the next few years appear good and that the only legislation necessary along this line at the coming session of Congress would be such as would aid in promoting voluntary consolidation plans. He said that informa-

tion he had received from railroad executives indicated that a favorable decision by the Interstate Commerce Commission in the Nickel Plate case would pave the way for the presentation of other plans and that he expected a decision in this case before Congress meets. Many who have followed the Nickel Plate hearings closely, however, do not expect a decision this year.

Railway Magazine Editors to Meet

The fall meeting of the American Railway Magazine Editors' Association will be held September 30-October 1 at the Hotel Cleveland, Cleveland, Ohio. C. E. Denney, vice-president of the Nickel Plate, will welcome the organization at the opening session at 9:00 a. m. on Wednesday, the 30th.

Among the topics that will be discussed on Wednesday and Thursday are "The Opportunities of the Editor of a Railroad Employee Magazine"; "How a Railroad Employee Magazine Can Help in Selling the Importance of Safety to Railway Employees"; "How It Can Be Utilized in Encouraging Home Owning and Thrift"; "How to Overcome Engraving Difficulties and Get the Most Out of Halftones"; "How Railway Employee Magazines Can Help in the Program for Americanization and Better Citizenship"; "Some Things the Missouri Pacific is Doing Which Furnish Good Copy for the Employees' Magazine"; "Problems of Circulation and How to Overcome Them"; "The Advantages of a Paid Circulation as Compared to Free Circulation."

The members of the association will join the Plant Publications Section of the National Safety Council at lunch on Wednesday and listen to an address on "House Organs and Broadcasting." They will also participate in the banquet of the National Safety Council on Wednesday evening, the principal speaker on that occasion being Carl R. Gray, president of the Union Pacific

OPERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM ROADS IN THE UNITED STATES

(For 191 Steam Roads, Including 16 Switching and Terminal Companies)

For the Month of July, 1925 and 1924

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924
Average number of miles operated...	236,659.09	236,213.12	59,410.74	59,548.46	5,531.69	5,532.63	38,529.34	38,353.91	133,187.32	132,778.12
Revenues:										
Freight	$377,516,579	$240,087,513	$168,900,818	$150,038,576	$19,108,559	$15,519,877	$48,767,130	$43,922,447	$140,740,072	$130,606,613
Passenger	*a* 97,916,235	*b* 97,358,927	49,745,313	49,077,801	1,895,931	2,114,915	12,519,366	11,751,510	33,755,625	34,414,701
Mail	7,787,596	7,829,101	2,984,293	2,999,944	200,530	196,226	1,106,990	1,110,622	3,495,783	3,522,309
Express	9,967,695	9,843,348	4,586,132	4,231,397	230,150	228,918	1,276,748	1,095,352	3,874,665	4,287,687
All other transp'r'n	17,097,006	15,928,029	10,032,301	9,125,996	208,264	208,386	849,302	805,262	6,007,139	5,788,385
Incidental	11,435,830	10,189,185	5,536,674	5,130,265	338,190	355,551	1,051,570	923,582	4,509,396	3,779,787
Joint facility—Cr.	827,401	793,619	319,943	349,470	15,857	12,761	136,621	132,471	354,980	298,917
Joint facility—Dr.	121,748	203,692	*d* 11,101	101,398	2,073	2,171	35,311	29,343	95,465	70,780
Ry. operat'g revs.	522,426,594	481,826,030	242,116,575	220,852,051	21,995,408	18,634,463	65,672,416	59,711,903	192,642,195	182,627,613
Expenses:										
Maint'n'ce of way and structures..	74,959,550	73,192,532	31,284,992	30,416,442	3,295,882	3,013,163	9,977,569	9,262,636	30,401,107	30,500,291
Maint. of equip't	105,322,051	99,470,797	50,586,787	46,654,393	5,144,146	4,671,965	13,171,220	12,862,431	36,419,898	35,282,008
Traffic	9,062,784	8,495,913	3,402,303	3,186,922	225,268	207,624	1,524,781	1,409,427	3,910,432	3,691,940
Transportation ..	175,205,369	171,482,746	82,226,146	81,094,371	5,836,290	5,605,938	22,494,350	21,713,845	64,648,583	63,068,592
Miscel. operations	4,921,024	4,396,884	2,075,411	2,012,691	80,616	79,744	425,190	359,449	2,339,807	1,945,000
General	14,635,929	14,245,395	6,447,837	6,122,367	472,634	466,296	1,897,618	1,826,722	5,817,840	5,830,010
Transportation for investment—Cr..	1,201,649	1,183,780	182,126	132,502	103,079	56,392	145,329	104,039	771,115	890,847
Ry. oper'g exps.	382,905,058	370,100,487	175,841,350	169,354,684	14,951,757	13,988,338	49,345,399	47,330,471	142,766,552	139,426,994
Net revenue from railway operations	139,521,536	111,725,543	66,275,225	51,497,367	7,043,651	4,646,125	16,327,017	12,381,432	49,875,643	43,200,619
R'way tax accruals	30,899,440	28,863,505	13,645,944	12,264,840	1,299,210	1,212,924	3,822,431	3,400,521	12,131,855	11,985,220
Uncollectible railway revenues....	136,778	173,390	66,237	75,097	3,891	7,403	22,640	21,203	44,010	69,687
Railway operating income	108,485,318	82,688,648	52,563,044	39,157,430	5,740,550	3,425,798	12,481,946	8,959,708	37,699,778	31,145,712
Equipment rents—Dr. balance	7,029,030	6,355,489	4,089,428	4,066,672	*d* 630,382	*d* 380,121	301,528	16,954	3,268,456	2,651,984
Joint facility rent—Dr. balance....	1,993,555	1,964,973	917,453	1,055,476	96,413	91,830	139,486	136,221	840,203	681,446
Net railway operating income...	99,462,733	74,368,186	47,556,163	34,035,282	6,274,519	3,714,089	12,040,932	8,806,533	33,591,119	27,812,282
Ratio of expenses to revs. (per cent).	73.29	76.81	72.63	76.68	67.98	75.07	75.14	79.26	74.11	76.34

For the Seven Months Ended with July, 1925 and 1924

Average number of miles operated...	236,632.21	236,083.84	59,471.49	59,532.12	5,506.95	5,507.35	38,515.28	38,355.61	133,138.59	132,688.76
Revenues:										
Freight .....$	2,497,702,610	$2,409,059,083	$1,126,454,800	$1,095,753,538	$121,166,297	$109,449,694	$349,104,462	$332,597,290	$900,977,051	$871,258,561
Passenger	*c* 596,691,532	*e* 626,407,601	293,567,759	301,133,279	13,082,059	14,438,749	86,461,754	87,328,736	203,639,960	223,506,837
Mail	55,863,972	56,045,475	21,413,288	21,528,016	1,469,273	1,395,042	7,977,907	7,941,454	25,003,504	25,180,963
Express	79,419,648	80,603,164	37,627,693	35,767,687	1,895,687	1,828,254	11,604,679	11,331,099	28,291,589	31,676,124
All other transp'n	113,575,825	109,934,882	66,002,744	63,423,003	1,400,790	1,379,777	6,617,103	6,200,713	39,555,188	38,931,389
Incidental	69,800,634	67,466,689	34,453,813	34,569,030	2,400,545	2,375,583	8,411,260	7,626,932	24,535,016	22,895,144
Joint facility—Cr.	5,967,750	6,138,591	2,616,378	2,493,674	114,360	102,731	939,932	913,111	2,297,080	2,629,075
Joint facility—Dr.	1,378,909	1,484,049	570,445	740,449	15,013	15,891	239,697	212,226	553,754	515,483
Ry. operat'g revs.	3,417,643,062	3,354,171,436	1,581,506,030	1,553,927,778	141,513,998	130,953,939	470,877,400	453,727,109	1,223,745,634	1,215,562,610
Expenses:										
Maint'n'ce of way and structures..	463,259,303	455,919,444	195,082,716	186,787,345	19,919,015	19,139,284	66,930,353	63,617,196	181,327,219	186,375,619
Maint. of equip't	735,093,147	741,759,104	354,752,482	356,138,947	34,052,734	32,532,569	91,895,541	93,327,578	254,392,390	259,760,010
Traffic	60,741,969	57,559,942	22,510,216	21,558,019	1,582,834	1,435,686	10,765,207	10,057,225	25,883,712	24,509,012
Transportation ..	1,237,315,394	1,268,999,491	584,685,864	607,586,898	40,511,972	41,753,653	165,026,056	167,100,229	447,091,502	452,558,711
Miscel. operations	30,491,845	28,841,280	13,896,201	13,799,339	621,293	598,832	3,632,093	2,953,822	12,342,258	11,489,287
General	101,522,447	98,866,053	44,860,242	43,626,687	3,290,616	3,110,231	13,105,256	12,771,340	40,266,333	39,357,795
Transportation for investment—Cr..	6,650,238	7,577,333	1,035,635	1,125,738	330,486	208,739	1,126,268	920,576	4,157,849	5,322,280
Ry. oper'g exps.	2,621,773,867	2,644,367,981	1,214,752,086	1,228,371,497	99,647,978	98,361,516	350,228,238	348,906,814	957,145,565	968,728,154
Net revenue from railway operations	795,869,195	709,803,455	366,753,944	325,556,281	41,866,020	32,592,423	120,649,162	104,820,295	266,600,069	246,834,456
R'way tax accruals	200,570,097	189,608,139	83,942,590	77,898,820	8,695,450	8,341,723	27,005,874	23,574,538	80,926,183	79,793,058
Uncollectible railway revenues....	1,001,139	1,239,911	464,378	581,008	35,545	23,695	133,228	115,296	367,987	519,912
Railway operating income	594,297,959	518,955,405	282,346,976	247,076,453	33,135,024	24,227,005	93,510,060	81,130,461	185,305,899	166,521,486
Equipment rents—Dr. balance	43,542,364	40,204,632	24,795,974	26,891,719	*d* 3,037,598	*d* 2,132,426	5,528,385	3,387,759	16,255,603	12,057,580
Joint facility rent—Dr. balance....	13,590,054	12,032,438	6,548,134	5,968,160	635,929	666,982	816,705	721,083	5,589,286	4,676,213
Net railway operating income...	537,165,541	466,718,335	251,002,868	214,216,574	35,536,693	25,692,449	87,164,970	77,021,619	163,461,010	149,787,693
Ratio of expenses to revs. (per cent).	76.71	78.84	76.81	79.05	70.42	75.11	74.38	76.90	78.21	79.69

a Includes $3,526,625 sleeping and parlor car surcharge. *b* Includes $3,377,241 sleeping and parlor car surcharge. *d* Deficit or other reverse items. *c* Includes $21,856,193 sleeping and parlor car surcharge. *e* Includes $20,963,512 sleeping and parlor car surcharge.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

System. On Thursday afternoon there will be a sight-seeing tour, through the courtesy of the Big Four, and on Thursday evening the members will be the guests at dinner of the Nickel Plate Railroad.

Wage Statistics for June

For the month of June, Class I railroads reported a total of 1,781,696 employees, an increase of 14,404 or 0.8 per cent over the returns for May, according to the Interstate Commerce Commission monthly bulletin of wage statistics. The total compensation increased $2,257,343 or 0.9 per cent. Compared with June of last year there is an increase in employees of 0.6 per cent. The total compensation, however, increased 4.6 per cent, due largely to an increase in the average number of hours worked per employee. There was one more working day in June, 1925, than in June, 1924.

The number of employees at the middle of the month was as follows:

TABLE 1

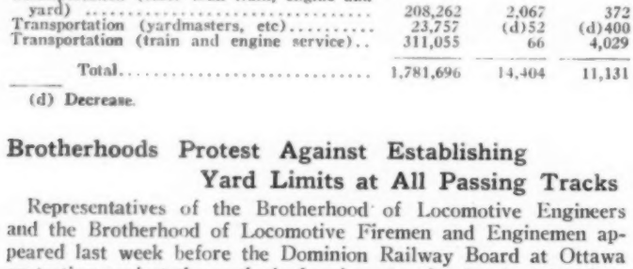
Group	June 1925	Increase over May 1925	Increase over June 1924
Executives, officials and staff assistants	16,436	(d)15	199
Professional, clerical and general	281,810	635	53
Maintenance of way and structures	422,373	12,586	6,332
Maintenance of equipment and stores	518,003	(d)883	544
Transportation (other than train, engine and yard)	208,262	2,067	372
Transportation (yardmasters, etc)	23,757	(d)52	(d)400
Transportation (train and engine service)	311,055	66	4,029
Total	1,781,696	14,404	11,131

(d) Decrease.

Brotherhoods Protest Against Establishing Yard Limits at All Passing Tracks

Representatives of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen appeared last week before the Dominion Railway Board at Ottawa protesting against the method of train protection involved in "Special Instruction E" in time tables of the Canadian Pacific and on portions of the Canadian National. It was contended that shortly after the introduction of uniform operating rules by the Canadian Pacific, and which had been agreed upon by representatives of the railways, the trainmen and the Dominion Railway Board, a special rule was inserted in the working time table which substituted a method of train protection not in harmony with or contemplated in the uniform operating rules approved by the board. Various representations have been made on this point, and following an appeal made by the trainmen to the Federal Cabinet in 1924 against a ruling by the Railway Board the Cabinet rescinded its former order which had sanctioned the by-laws of the Canadian Pacific and subsidiary lines. The Railway Board on the present features of the case will issue its finding at an early date.

The time table rule to which the brotherhoods object follows: "E.—The outer main track switches of passing tracks will be considered 'station limits,' and main track may be used inside of such limits by keeping clear of first and second class trains. All trains except first and second class trains must, unless otherwise directed, approach and pass through such limits, prepared to stop unless the main track is seen to be clear. Trains occupying or using main track outside of station limits must be protected unless train orders or schedules confer the right to use main track. Trains or yard engines occupying the main track inside of station limits at terminal points, as per rule D. 93, must not, where there are two or more main tracks move against the current of traffic, except under protection as prescribed by rule 99. In all cases during foggy, smoky or stormy weather, protection, as per rule 99, must be maintained to ensure absolute safety."



Photoworld

Railway Station, Bergen, Norway

Railroad Advertises Crossing-Stop Law

President L. A. Downs, of the Central of Georgia, in one of the regular newspaper articles which he publishes in the local press throughout his territory, calls upon the citizens of Georgia to pay heed to what their legislators have done for them, and to observe the new crossing law. He says, in part:

GRADE CROSSING REGULATIONS

Last year 2,149 people were killed in grade crossing accidents. The railroads everywhere are endeavoring to save lives at grade crossings. The Georgia Legislature has enacted a law requiring drivers of automobiles to come to a full stop at certain crossings, which will be designated by the county commissioners as dangerous and which will be so marked by warning boards. At all other crossings automobilists must reduce speed to six miles an hour.

The Central of Georgia urges that those operating automobiles familiarize themselves with the provisions of this law, and observe it. The states of North Carolina and Tennessee have stop laws. Grand juries in Alabama have recommended that the legislature of that state enact a similar measure. There is increasing recognition that this is a subject for regulation.

The management is doing its part in reducing the perils of grade crossings. Reconstruction of the line between Birmingham, Ala., and Columbus, Ga., now nearing completion, eliminates 40 grade crossings within a distance of 156 miles. State highway departments and federal authorities are working with the railways to avoid grade crossings where new highways are built.

The regulations of Georgia and of other states are reasonable and should be obeyed. The Central of Georgia believes that right thinking people will recognize the desirability of such measures, as they do that of municipal regulations of "one-way streets," "limited parking time," and the like. Such regulations expedite traffic. Stop laws at grade crossings are much more important in that they are intended to preserve human life.

Engineers, trainmen and all other employees are required to exercise the greatest possible caution. Crossings are all plainly marked. Many of them are guarded or otherwise protected. Public support, through observance of the new Georgia law, of the laws of other states, and common sense precautions, is the co-operation that the railways seek.

Georgia Crossing-Stop Law

The law recently adopted in the state of Georgia (House Bill No. 25, August 20) noticed briefly in the *Railway Age* of September 19, page 538, consists of 11 sections, and is already in effect; but the time limit within which railroad companies must erect approach signs is January 1, 1926. The law does not apply in any incorporated town or city, nor at any crossing at which an attendant is regularly employed.

Section 1 requires the county commissioners to designate each crossing as either safe or unsafe. A "safe crossing" is one with a good view along the railroad for 600 ft. each way "from the crossing and the approach thereto." An "unsafe crossing" is one where there is no such clear view, or where there is an abrupt crossing; or where the highway is parallel or practically parallel with the railroad as it approaches the crossing; or where, because of the frequent use of the crossing, it is, in the judgment of the county commissioners, practically dangerous.

Section 2. This requires the county commissioners to give suitable notices to each railroad by November 1, 1925. The commissioners have power at any time to change the classification of a crossing from safe to unsafe.

Section 3. On 60 days' notice from the commission, the rail-

road must set up approach signs 30 in. by 40 in., 10 ft. high, red letters on a white ground, at the right-hand side of the highway, 100 ft. from the rails. The sign shall read "Georgia Law —Stop—Unsafe R. R. Crossing." The letters must be nine inches high.

Section 4. Every person operating a motor vehicle is required to bring his vehicle to a full stop at each unsafe crossing, within 50 ft. of the rail, before crossing.

Section 5. At "safe crossings" the railroad must erect a sign reading "R. R. Crossing—Slow Down to 6 Miles—Ga. Law."

Section 6 requires motor vehicles to cross "safe crossings" at not more than six miles an hour.

The offenses created in this law are not to be considered as warrantable offenses but prosecutions shall be by indictment or accusation.

Section 7. The act applies to street and interurban railroads outside of cities and towns. It shall not apply to a railroad crossing regularly protected by gates or watchmen.

Section 8. Failure to observe the law shall not be considered as an act of negligence in any action against the railroad company for injury to person or property, but the facts in any case may be considered in determining the question of negligence. The rule of law in reference to presumptions against railroads shall not be affected by this act, and in trials, the judge must ignore it. This Act must not be read to a jury.

Section 9. The act applies to "main lines," meaning any railroad track over which regularly scheduled trains are customarily operated.

Section 10. Violation is a misdemeanor; penalty from $5 to $50; the court may alternatively impose a sentence of imprisonment, not over 15 days.

Section 11 repeals laws in conflict with this act.

Thornton Refuses to Enter Canadian Campaign—Conservatives and Liberals Both Oppose Merger

Responding to requests for a reply to various charges made against the Canadian National by political speakers in the present Canadian election campaign, Sir Henry Thornton, president of the system, made the following statement in Montreal:

"With the various officers of the company, I have been responsible for the working of the Canadian National Railways since the autumn of 1922. The people of Canada have had ample opportunity, since that time, to determine the character of the service rendered by the system, the zeal and diligence of its employees, the fidelity of its officers and the general administration of the enterprise from both a financial and operating point of view. The efforts of the management are sufficiently absorbed in attending to their duties, and it is my opinion that it would be detrimental to the welfare of the enterprise, and likewise unreasonable, to expect the executive of the Canadian National Railways to deal with accusations and statements made in the heat of an election campaign. In general I have decided that it will be our policy to allow the people of Canada to judge the value of such statements from their knowledge of our record."

Arthur Meighen, leader of the Conservative (opposition) party, has evidently joined the Liberal party in opposing an amalgamation of the Canadian Pacific and Canadian National. An intimation to this effect was issued from Conservative headquarters at Ottawa last week:

"The report is being circulated that the Leader of the Opposition is in favor of the amalgamation of the two great railway systems. Mr. Meighen has defined his position on this subject in the following:

"Referring your wire, have never at any time advocated amalgamation of railways. Have expressed the fear that the Government's deliberate policy during late years of loading the system with huge and unnecessary obligations is driving such system into position where rescue will be exceedingly difficult. The policy I have recommended is the only course to take which has chance of avoiding either amalgamation or sale. You may deny absolutely, as I have done repeatedly myself, the statements of our opponents as referred to in your letter."

That the Canadian Pacific is not seeking a merger was made clear by President E. W. Beatty in a statement made at Winnipeg. Mr. Beatty stated that the C. P. R. was not advocating any system of amalgamation with the Canadian National. The problem, he said, was one initially for the Government.

Traffic News

The "Washington-Broadway Limited" of the Pennsylvania, running between Chicago and Washington, is now called the "Liberty Limited."

The Chicago & Eastern Illinois is planning the operation of buses between Chicago and St. Louis, to counteract the effects of automobile and bus competition.

Union Pacific shopmen in Nebraska have protested to the Nebraska State Railway Commission against what they declare to be the unfair competition of motor buses on the public highways which has tended to reduce their employment. The protest asks that the bus lines be regulated in the same way as the railroads in regard to regularity of schedule, unnecessary duplication of service, and safety.

Canada's Bumper Grain Crop

All records in the handling of this year's bumper grain crop in Western Canada have been broken both by the Canadian Pacific and the Canadian National. The amount of grain marketed and loaded in the first fifteen days of September by the Canadian Pacific has already exceeded the unprecedented figures of the famous crop of 1915, and the previous grain record of the road which was made in 1923 has now been exceeded by 9,256,630 bushels. During the eleven working days ending with September 17-23, 424,663 bushels of wheat and 5,602,167 bushels of other grain were marketed and loaded on western lines of the Canadian Pacific, making a total of nearly 30,000,000 bushels.

More than 15,000,000 bushels of grain marketed during the first twelve days of September established a new record for the Canadian National in Western Canada. The total marketings at Canadian National points from Sept. 1 to Sept. 12 amounted to 15,012,000 bushels, as compared with 2,288,000 bushels in the same period in 1924 and 8,792,000 bushels in 1923. Loadings during the period were 10,794,000 bushels against 1,974,000 in 1924 and 5,597,000 bushels in 1923. Since August 1,218 cars of grain have been delivered to Vancouver by the Canadian National.

Claim Canadian Roads Have Not Reduced Rates as Ordered

A lively fight is expected at Ottawa on September 29 when the Dominion Railway Board will commence its hearing of the application of the Canadian Pacific for a revision of the Board's order of some days ago putting into effect reduced rates on grain and flour westbound from the prairie provinces to Vancouver. The new rates became effective on September 15 but from the tariffs filed by the Canadian Pacific and Canadian National with the Railway Board and from what is being said by representatives of Western grain shippers and by British Columbia interests who have hoped to gain considerably from this increased traffic through Vancouver it appears that instead of a general reduction in rates there have in some instances been increases, although in a general way and on an average there has been a decrease.

From all points in Saskatchewan and Alberta protests have been made that instead of putting into force the rates ordered by the Board the railways, it is alleged, have undertaken to defy the authority of the Board and, it is further charged, have put into effect only the rates that are of advantage to the railways. The railways, on the other hand, declare that they have obeyed the spirit of the order and put into effect the rates requested. From recent developments it is evident that the Board at its sitting on September 29 will have to consider not only the application of the Canadian Pacific for a revision of the order but will also, in case the order is not rescinded or in case there is a tie on the question, have to consider the matter of enforcing its order.

According to the provision of the Railway Act establishing the Railway Board two of its five members only went to Vancouver some weeks ago to hear the appeal of British Columbia for lower westbound export rates on grain and flour. Later those two—Chief Commissioner H. A. McKeown and Commissioner

Frank Oliver—issued their order for a reduction of rates. After the issuance of their finding the other three members—Commissioners S. J. McLean, A. C. Boyce and Calvin Lawrence—made known their dissent from the order, but even though they were in the majority the order is legal and binding until there is a rehearing and until after such rehearing a majority of the Board favor a revision. Even then the Western grain interests may appeal to the federal Cabinet (Privy Council) which may order the Board to enforce its original order and, if the railways should refuse to go farther than the tariffs they have filed, impose upon them the penalties provided in the Railway Act, namely, a fine of not less than $20 nor more than $5,000.

Curtailment of Station and Train Service on B. & M.

The Boston & Maine announces that beginning with the new time table, September 27, the train service on the Newburyport branch between Newburyport and Wakefield, about 28 miles, will be reduced to two trains a day each way; two southward in the morning and two northward in the evening; and at the same time there will be a curtailment of station service, in accordance with plans for reducing expenses which have been made following extended discussions with the Department of Utilities of the state of Massachusetts. This is called a "final effort" to stop the annual operating loss of $106,000 on this section of the road and thus avoid complete abandonment of the line.

Representatives of the communities affected have co-operated with officers of the road, and it is expected that the railroad and the public will join their efforts to make the business of the line sufficiently profitable to warrant the continuance of its operation. The statement issued by the road says quite definitely that in order to make the plan successful, the revenues must be increased. All station forces are to be withdrawn except at Danvers and Georgetown and, following the reduction in the number of trains, attendants will be withdrawn from some of the highway crossings.

The trains will make all stops as at present, and passenger station buildings will be continued in use as shelters. At stations where there has been an agent, a traveling agent will attend to the wants of shippers, a schedule now in preparation providing for this agent's presence at each station for a short period each day. At certain crossings the speed of trains will be reduced so as to maintain the necessary safety.

The reduction in passenger train mileage will be about 65 per cent.

The stations to be attended to by the traveling agent are indicated in the table below by the letter T; those at which agents are retained are indicated by the letter A; and stations already non-agency are indicated by an asterisk.

STATIONS ON NEWBURYPORT BRANCH, B. & M. R. R.

Miles		
0.	Newburyport	A
5.53	Byfield	T
8.91	Georgetown	A
10.13	Baldpate*	..
12.55	Boxford	T
15.60	Topsfield	T
19.61	Putnamville*	..
21.19	Danvers	A
	Danvers Junction*	..
21.74	Tapleyville	Danvers agent is in charge
22.22	Collins Street	..
24.30	West Peabody	..
27.19	Lynnfield Centre	T
28.81	Lowell Street*	..
29.87	Wakefield Centre	A
30.34	Wakefield Junction	Wakefield agent is in charge.

A local freight train is run on the Newburyport branch, northbound one day and southbound the next. As connection is made with other lines at both ends of this short section, the service is equivalent to a train every day each way for the most of the traffic.

The Massachusetts Department of Public Utilities has recommended to the Interstate Commerce Commission that it grant the petition of the Boston & Maine for authority to abandon the branches named in the petition sent to the commission by the road, between South Reading, Lawrence and Tewksbury; between Lowell and Lawrence; between Salem and Lowell; and the Lawrence branch between Danvers and North Andover; and advises that the department approves the action which has been taken in connection with the Newburyport branch.

On several short sections of the branches which it is proposed to discontinue, tracks will be maintained for use in delivering carload freight to certain industries and state institutions.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has issued a decision in a case instituted by complaint of the Des Moines, Ia., Board of Trade, that the proportional rates on grain in carloads from Des Moines to destinations in Texas are unduly prejudicial to shippers at Des Moines and unduly preferential of shippers at Council Bluffs, Ia., and Omaha, Neb., to the extent that they exceed the contemporaneous rates from Council Bluffs or Omaha to the same destinations.

Albion Lumber Company's Steamers

Upon application of the Southern Pacific Company and the Albion Lumber Company under provisions of section 5 of the interstate commerce act, as amended by section 11 of the Panama Canal act, the commission has found that so long as the railway line between Albion, Cal., and Christine is not extended so as to connect with any trunk line, the Southern Pacific does not and cannot compete with lumber steamers operating between Albion and ports in California south of San Francisco, and on the west coast of Mexico, and that the operation of lumber steamers by the Albion Lumber Company (the stock of which is owned by the Southern Pacific), in connection with its lumber business between those points, will not be in violation of section 5 of the interstate commerce act, as amended by the Panama Canal act.

Court News

Rest and Feed Statute—Feed Placed in Cars

The Circuit Court of Appeals, Third Circuit, holds that under rest and feed statutes requiring feeding while unloaded at "the reasonable expense of the owner," the railroad cannot, without agreement therefor, recover for feed placed in the cars after reloading.—Pennsylvania v. Swift & Co., 4 F. (2d) 61.

Boiler Defects—Federal Law—Each Day of Use Separate Violation

The federal district court for eastern New York holds that under the Boiler Inspection Act each day of use of a locomotive with a defective boiler is a separate violation of the statute.—U. S. v. L. I., 4 Fed. (2^d) 750.

Storage on Outbound Shipments

The Circuit Court of Appeals, Sixth Circuit, holds that under the uniform bill of lading Rule 4, paragraph b, authorizing storage on outbound freight held to complete a shipment, or for forwarding directions, storage was not collectible on beets piled on the right of way some distance from the place where freight is received. The carrier did not excercise any care or control over them and could not have been held liable for their loss or damage.—Davis v. Continental Sugar Co., 5 Fed. (2^d) 420.

Federal District Court's Jurisdiction Over Commission's Final Valuation of Railroad Property

The federal district court for southern California holds that under section 1 of the Commerce Court Act of 1910, and the act of 1913 abolishing that court and transferring its jurisdiction to the federal district courts, a district court has jurisdiction of a suit to set aside a final valuation by the Interstate Commerce Commission of a railroad company's property.

If new evidence is introduced before the district court in such a suit, the court must, under the statute, certify it to the Commission for its consideration and action thereupon. Should the Commission not rescind or change its order fixing the final valuation within the time to be fixed by the district court, that court must render judgment on the original order, in view of all the evidence introduced before it.—Los Angeles & Salt Lake v. United States, 4 Fed. (2^d) 736.

Foreign Railway News

Railway Between Uberaba and Porto Feliz, Brazil

A concession has been granted by the state government of Minas Geraes to Messrs. Armando Carneiro and Phillip A. Burton, for the construction and operation of a steam or electric railway between Uberaba and Porto Feliz, a distance of approximately 250 miles, according to Consular Clerk Brunk at Rio de Janeiro. The road is to be of 1-meter gage.

Construction Activities in Brazil

Construction is going forward rapidly on the Lavras to Carmo da Cachoeira branch of the Rede Sul-Mineira (Brazil), says Commerce Reports, which will permit rapid transportation to the south of Minas and reduce the present traveling time by practically one-half.

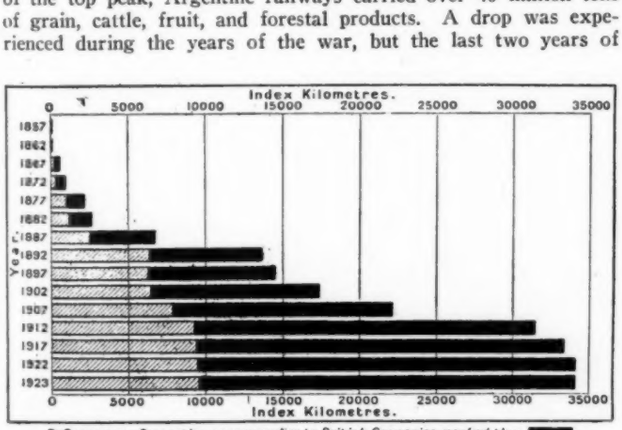
Plans for the construction of a railway between Campanha and Porto de Santa Maria have been approved by the state government and a contract has been made with the Rede Sul-Mineira for the actual construction work.

Since March 1, 1925, concessions have been granted for the construction of two railways, an electric line from Caracol to the border of the state of Sao Paulo (8 kilometers), and a line from Uberabinha to Porto Feliz, about 400 kilometers.

The management of the Sorocabana Railway, after having studied numerous schemes to relieve the traffic congestion on its lines, has decided to double track the section between Sao Paulo and Sorocaba. The cost is estimated at about 21,000 contos ($2,772,000).

Railway Traffic in Argentina

Looking back over the railway records, one finds that 50 years ago, when the sight of a locomotive was but 20 years old in Argentina, the embryo lines carried yearly 720,000 tons of freight, says the Times (London). At the end of the century the quantity had risen to nine or ten million tons; and in 1912, the year of the top peak, Argentine railways carried over 40 million tons of grain, cattle, fruit, and forestal products. A drop was experienced during the years of the war, but the last two years of



From the Times (London)

The Railways of Argentina

recovered business again show big figures, almost to the 1912 level.

The increase in passenger traffic has kept pace with the intensive culture of the land, changing from a purely pastoral country to one of fields, orchards, and industries. Fifty years ago, not many more than two million passengers were annually transported by the railways of Argentina. By the end of the nineteenth century nearly 20 millions were being carried, and during the last year or two about 120 million people have annually traveled upon these lines. The number of men employed has risen during the last 25 years from about 40,000 to 125,000.

To the opening of great areas of flat and fertile lands has been due the efficacy of Argentina's invitation to immigrants. Before the advent of the railways the population of the country was about two millions; it had risen by the end of the century, when foreign workers were entering at the rate of 100,000 a year, to over four millions, and at the time of the outbreak of war in Europe when Argentina was receiving nearly 400,000 people annually the inhabitants of the country numbered about eight millions. Today, after a ten-year period of diminished entry and gradual recovery, Argentina is admitting about a quarter of a million people yearly, and counts her population at ten millions.

The great work performed by a ramification of lines with a total length of 22,220 miles (of which the British proportion is 65 per cent, with the National lines accounting for about 20 per cent, and the remainder controlled by French interests) has entailed the investment of immense sums. Reckoning the whole of the lines together, the capital employed is estimated at $1,346,537,815.

The Proposed London Freight Subway

Details have been published in the Times (London) of the proposed subway designed to deal with the goods and parcels traffic of London. The promoters are described as the London Underground Goods Railways, Limited, who have arranged to form a promotion company with a nominal capital of £100,000 for the purpose of obtaining the necessary statutory powers from Parliament. The provision of the capital—some £32,000,000—is stated to have been arranged through the co-operation of English and American banks under conditions which provide for the distribution of the issue between the two markets.

In the announcement made it is stated that Underground Goods Railway has been designed to afford the enormous and growing freight and parcel traffic of London a new and improved method of transport by underground railways communicating with all the principal terminals and with the London docks, etc. The undertaking provides for underground tubes, carrying about 69 miles of track, linking up all the principal railway freight terminals, i. e., Paddington, Marylebone, Euston, St. Pancras, King's Cross, Bishopsgate, Fenchurch Street, Nine Elms, Bricklayer's Arms, and Hammersmith, with one another, with the London Docks, with Hay's Wharf, and with the main distributing trade centers and consuming areas of the metropolis. The line would be standard gage, operated electrically by power from the existing supply stations and, at the various points of reception and exchange where contact cannot be obtained by gradient, would be equipped with electric elevators capable of moving one or more loaded cars at a time.

"The slow-moving goods traffic," the statement proceeds, "is principally responsible for the serious congestion now prevailing throughout the Metropolitan area of London. It is estimated to represent a direct daily waste of not less than £200,000, and, if this traffic could be reduced in the manner and to the extent projected, it is calculated that the condition of the streets and bridges, so far as free movement is concerned, would be restored approximately to what it was many years ago." It is expected that the facilities the undertaking would provide, in the dispatch and reception of exports and imports, by accelerating their transport and decreasing the cost of handling, would attract increased trade to the Port of London, which is the cheapest port in the world to enter, but, in the matter of distributing after the cargoes have been landed, the dearest.

The following are mentioned as among the markets and trade centers which would be served and linked to the system:—

Markets.—Covent Garden, Smithfield, Farringdon, Billingsgate, Leadenhall, Spitalfields, and the Borough Market in South London.

Trade Centers.—Hammersmith, Westbourne, Grove, Paddington, Marylebone, Tottenham Court Road, Kensington, Knightsbridge, Oxford Street, Oxford Circus, Victoria Street, Fleet Street, and Wood Street.

The Post Office would be offered direct access to the new system, while it is planned to give the more important of the large stores and shopping districts similar facilities. It is also claimed that the carriage of goods underground by means of the new railway would so relieve the burden on the bridges as to be equivalent to doubling their number and capacity. All of the new railway lines would converge upon a redirecting circulating station underground in a central position, furnished with electrical equipment, where through traffic, extending from single cars to whole trains, would be redirected and dispatched to their ultimate destinations,

by which means unavoidable and costly duplication of organizations would largely disappear along with much rehandling of goods, with its inherent disadvantages and extra costs. Throughout each of the three years during which the railway would be under construction it is estimated that the enterprise would, directly and indirectly, bring about employment to some 50,000 men.

The details of the project are now receiving the consideration of the railways through a committee representative of the four great railway groups.

Train Speeds in Britain

A spirited controversy has been going on in the "letters to the editor" columns of the Times (London) between Lord Monkswell and Sir Sam Fay, who was formerly general manager of the Great Central. Lord Monkswell in his first letter said, in complaining of the slowness of the passenger service now offered by the British roads, among other things, the following:

"This is nothing less than an almost complete boycott of the question of acceleration on the part of the hierarchy of officials who control the railways. Any important change on the railways has to be considered by so many people, each one of whom possesses in effect the power of veto, that suggestions for radical improvements are not in practice considered on their merits, but rather as effecting the chances of a quiet life for the official hierarchy as a whole, the majority of the members of which are always in favor of saving themselves trouble by doing nothing.

"I have frequently discussed the question of acceleration with railway directors and officers and found that, while the former are absolutely in the hands of the latter, the latter's point of view is exactly that which we are told was held by the stage-coach proprietors when railways were first introduced: they possess a monopoly and cannot imagine why anyone should ever trouble to offer the public speeds higher than those which they chose to offer at the present time. The average railway officer, in my experience, simply refuses to think about acceleration at all and is utterly impervious to argument, to which he does not listen."

Sir Sam replied, in part, as follows:

"There are several answers to the claim for increased speeds of express trains. Among them are (1) the weight of trains today as a consequence mainly of the more elaborate accommodation provided for passengers has continually increased and bears no comparison in that respect with similar trains of 15 years ago; (2) the lines are becoming more and more crowded in the suburban areas and it is not easy to find a path for trains at high speed; (3) there are passengers other than those who travel by the 'best trains,' and these deserve consideration in the timing of trains calling at a number of stations—in other words, the train service must be dealt with as a whole, not as an express service only; (4) there is a human factor apart from the 'hierarchy' and those who desire increased speed, viz., the engine-driver of a fast train—I wonder if my Lord Monkswell has ever visualized what call there is upon the vigilance of men who drive engines by night as by day covering over a mile of line per minute, and all expresses do this on some portion of the journey."

In a second letter Lord Monkswell said:

"It is almost incredible that a man of Sir Sam's experience should really put forward a plea of this kind. He must know as well as I do that speeds vastly higher than those attained by the best British trains of today have on innumerable occasions been successfully run in various parts of the world. For example, 23 years ago I traveled on the footplate of an engine of the Chemin de Fer du Nord, which covered rather more than 71 miles in an hour in spite of two service slacks, and 21 years ago I traveled on the footplate of a Pennsylvania Railroad engine which covered 40 miles in rather less than half an hour. I have traveled many thousands of miles on the footplates of engines working the fastest express trains in Great Britain (including the 2.32 a. m. newspaper train from Marylebone to Nottingham, which I believe to be the fastest train in the country) and France, and have never seen a trace of the strain which Sir Sam seems to suggest is so terrible."

Miscellaneous

The following reports have been received by the Bureau of Foreign and Domestic Commerce from its agents in various parts of the world.

For the first time since the post war slump American locomotives have been delivered for use on the express mail trains between Cape Town and Johannesburg. Competition for the order of these locomotives was keen. British prices were considerably above the American, but German quotations were approximately 50 per cent lower. An order for four special type locomotives was placed with an American manufacturer and 21 with F. A. Maffei of Munich, Bavaria. The delivery of the American locomotives was on the stipulated date, but the German manufacturer has not been able to fulfill the agreement. A forfeiture of 10 per cent furnished by the German firm and a further forfeiture of 2 per cent per week are being incurred. In view of the extremely low quotation made by the German firm the completion of the contract will probably involve a heavy loss.

The Italian State Railways will invest in the Albanian oil fields, according to an agreement signed by the Anglo-Persian Oil Company and the administration of the Italian State Railways. The railway will invest the profits of its last fiscal year, which are reported to be approximately 100,000,000 lire.

German railway workers are demanding wage increases of 5 pfennigs an hour. It is expected that the Federal Railway Company will reach a decision concerning this demand around the middle of August. At the present time the hourly wage for scheduled workers employed by the Federal Railway Company is considered below industrial wages with the exception of the textile industry and a few of its branches. From the point of view of the consumer passenger rates are evidently approaching the maximum and higher fares would simply result in a falling off of passenger traffic. The last increase awarded German railroad labor was in March of this year and was followed by a 10 per cent increase in passenger rates on May 1.

Contracts for further electrification of the Austrian railways are being let to domestic firms as a result of the $16,000,000 credit extended for railway electrification from the League of Nations loan.

The construction of the Sibambe-Cuenca Railway, Ecuador, has been awarded to the Compania Constructora del Azuay of Cuenca, Ecuador. This company is financed by bankers and capitalists of Cuenca and Guayaquil. Roberto Crespo Ordonez of Cuenca is the promoter and manager of the company. The entire construction, inclusive of rolling stock, telephone and telegraph lines is estimated to cost 2,000,000 sucres. Work is to commence immediately. Bids have been asked by the company on the following sub-contracts: (1) provision of rails and accessories, and rolling stock; (2) construction of bridges, tunnels, cuts, drains and culverts in the section Tipococha-Tambo; (3) terrepleins and fills in the same section; (4) cross ties for 25 kilometers of railway; (5) installation of telegraph and telephone line, Sibambe to Cuenca, and (6) localization, estimates, etc., in the section Tambo-Cuenca.

Locomotives are being constructed in India by the Bombay, Baroda & Central India work shops at Ajmer. Facilities exist in the meter gage carriage and wagon shops for the construction of engines, and passenger and freight vehicles entirely from raw materials. Locomotives built in the Ajmer workshops during the last fiscal year were of the 4-6-0 freight type and a special feature of these locomotives is the boiler construction, which is of a wide firebox type with ample grate for burning low grades of coal. The ratio of grate area to cylinder volume is over 45 per cent greater than the usual meter gage practice in India.

Work on Quito-Esmeraldas (Ecuador) railway extensions is to start within four months from June 14, 1925. Work is to be carried on under the Dobbie-Simmons contract for the construction of the Quito-Ibarra section of this road.

That an $80,000,000 investment is to be made in freight subways for London is a rumor which persists in that city. The story is that a series of freight subways connecting all the important railway termini of London as well as the distributing centers in industrial sections are to be connected.

The construction of a railway from Puerto Supe to Paramonga, Peru, has been authorized by an executive decree of June 26, 1925. The line is to be of 1.05 meter gage. It will be 20 miles long and must be completed within 2 years.

The Central Railway of Peru has purchased electric platform trucks in England for use in the main railway station in Lima.

The Norwegian State Railways will operate motor bus lines in order to determine the practicability of discontinuing certain small local railroad lines in favor of bus routes.

Equipment and Supplies

Locomotives

THE SEABOARD AIR LINE has ordered four Mikado type locomotives from the Baldwin Locomotive Works.

THE H. L. BRUCE COMPANY has ordered one Prairie type locomotive from the American Locomotive Company.

THE RICHMOND CAR WORKS has ordered one six-wheel switching locomotive from the American Locomotive Company.

THE CHESAPEAKE & OHIO has ordered from the American Locomotive Company 50 heavy Mikado type locomotives to cost approximately $3,750,000. According to the contract, the locomotives will be built in the locomotive company's Richmond, Va., plant and delivery will start in December. Inquiry for this equipment was noted in the *Railway Age* of September 5.

THE LOUISVILLE & NASHVILLE has ordered 24 heavy Mikado type locomotives from the American Locomotive Company. These locomotives will weigh 165 tons and will have 27 in. by 32 in. cylinders. The company was reported in the *Railway Age* of September 12, as inquiring for 20 Mikado type and 10 Mountain type locomotives. The quantities should have read 24 and 8 respectively.

Freight Cars

THE CHILE EXPLORATION COMPANY is in the market for 100 cars.

ARMOUR & COMPANY of Chicago are inquiring for 300 steel underframes.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 500 center sills for freight cars.

THE OLIVER IRON MINING COMPANY is inquiring for five 30-ton flat cars and four 40-ton flat cars.

THE KENTUCKY WAGON MANUFACTURING COMPANY is inquiring for 250 steel underframes for flat cars.

THE FRUIT GROWERS EXPRESS has ordered 387 steel underframes from the Pressed Steel Car Company.

THE CHICAGO & NORTH WESTERN has ordered 23 caboose underframes from the Illinois Car & Manufacturing Co. Inquiry was reported in the *Railway Age* of August 29.

THE LOUISVILLE & NASHVILLE has ordered 500 box cars from the Standard Tank Car Company, 500 coal cars from the Pressed Steel Car Company, and 250 flat cars from the Bethlehem Steel Company. The approximate cost will be $2,500,000.

THE ILLINOIS CENTRAL has ordered 500 single sheathed automobile box cars from the American Car & Foundry Company and 500 from the Pullman Car & Manufacturing Company. Inquiry for these was reported in the *Railway Age* of August 15.

Passenger Cars

THE LOUISVILLE & NASHVILLE has ordered three combination passenger and baggage gasoline rail motor cars and one straight passenger gasoline rail motor car from the J. G. Brill Company.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 15 wide vestibule standard coaches from the Pullman Car & Manufacturing Company. Inquiry for these cars was reported in the *Railway Age* of August 15.

Iron and Steel

THE CHESAPEAKE & OHIO is expected to enter the market for 30,000 tons of rail.

THE FLORIDA EAST COAST is inquiring for 25,000 tons of 90-lb. rail for 1926 delivery.

Machinery and Tools

THE CHESAPEAKE & OHIO is inquiring for one 25-ton locomotive crane.

Signaling

THE CHICAGO, BURLINGTON & QUINCY is to install automatic block signals on its line between Ottumwa, Iowa, and Osceola, 80 miles.

THE GRAND RAPIDS, GRAND HAVEN & MUSKEGON has ordered from the Union Switch & Signal Company a dwarf Saxby & Farmer interlocking for Grand Haven, Mich.

THE NORFOLK & WESTERN has bought from the Union Switch & Signal Company 20 "grade signals" of the position-light type, for installation between Shenandoah, Va., and Roanoke.

THE INTERNATIONAL-GREAT NORTHERN is installing a mechanical interlocking plant at Austin, Texas, and has ordered from the Union Switch & Signal Company a 12-lever Saxby & Farmer interlocking machine with vertical leadout.

THE MICHIGAN CENTRAL has ordered from the Union Switch & Signal Company the material for enlargement of the existing electric interlocking at Bay City, Mich.—25 Style "M" electric switch and lock movements, with necessary lever lights and detector locking.

THE NEW YORK, CHICAGO & ST. LOUIS has contracted with the Union Switch & Signal Company for a Type "F" electric interlocking at South Gary, Ind.; one 11-lever Model 14 interlocking machine, ten Style "M" switch movements, ten Style "R" light signal units, one Style N-2 dwarf signal and two dwarf signals of position light type; also six "HC-2" flasher light crossing signals and necessary relays for crossing protection within the interlocking limits.

THE IMPERIAL GOVERNMENT RAILWAY OF JAPAN has ordered from the Union Switch & Signal Company the materials for three electro-pneumatic interlocking plants to be installed at Shinjuku, near Tokyo. The three machines will have, respectively, 59, 26 and 25 working levers. The high signals are semaphores and dwarfs position-light type. The track circuits are to be a.c. throughout. The order includes three illuminated track diagrams. Check locking will be provided between adjacent towers.

LOCOMOTIVE REPAIR SITUATION

Date, 1924	No. locomotives on line	No. serviceable	No. stored serviceable	No. req. classified repairs	Per cent	No. req. running repairs	Per cent	Total req. repairs	Per cent
February 1	64,377	53,586	4,116	5,919	9.2	4,872	7.6	10,791	16.8
April 1	64,363	52,805	4,648	6,128	9.5	5,430	8.4	11,558	17.9
July 1	64,416	53,382	7,117	6,035	9.4	4,999	7.7	11,034	17.1
October 1	64,538	53,209	5,424	6,175	9.6	5,154	8.0	11,329	17.6
January 1, 1925	64,384	53,118	4,849	5,927	9.2	5,339	8.3	11,266	17.5
February 1	64,308	52,994	4,220	6,143	9.6	5,171	8.0	11,314	17.6
March 1	64,255	52,851	4,988	6,217	9.7	5,187	8.0	11,404	17.7
April 1	64,230	52,619	6,241	6,345	9.9	5,266	8.2	11,611	18.1
May 1	64,034	52,933	6,697	6,082	9.5	5,019	7.8	11,101	17.3
June 1	63,976	53,074	6,618	5,916	9.2	4,986	7.8	10,902	17.0
July 1	63,942	53,025	6,600	5,832	9.1	5,085	8.0	10,917	17.1
August 1	63,921	53,263	6,313	5,740	9.0	4,918	7.7	10,658	16.7

Data from Car Service Division reports.

Supply Trade News

The National Lock Washer Company has moved its Chicago offices from 1535 Lytton building to 1103 Straus building.

The Kuhlman Electric Company, Bay City, Mich., has appointed the **D. H. Braymer Equipment Company,** 727 W. O. W. building, Omaha, Neb., as district representatives in Iowa and Nebraska.

The Conveyors Corporation of America has appointed **Rowland & Burns,** 39 Cortlandt street, New York, as district engineers, to handle the sale of the company's products in New York and vicinity.

Milburn Moore, whose appointment as district sales manager of the **Verona Tool Works,** Pittsburgh, Pa., with headquarters at 50 Church street, New York, was announced in the *Railway Age* of September 5, entered the Armour Institute of Technology in 1905, taking a three-year course in the Scientific Academy and then a four-year course in mechanical engineering with extra work in the civil engineering department. After graduation he entered the service of the United States land department as a chainman, being later advanced to instrumentman on original survey work in the state of Montana. Returning to Chicago upon the completion of this work, he was employed as a salesman for an automobile specialties company until 1913, when he joined the engineering staff of the Chicago, Milwaukee & St. Paul, serving as rodman and instrumentman and acting resident engineer on both maintenance and new construction work. In December, 1914, he went to Florida to assist in developing an orange and grape fruit grove, in addition to maintaining a small automobile and marine engine repair shop. In June, 1917, he enlisted in the motor truck service of the United States arm and was sent overseas as a truck dispatcher in active service at the front. After being mustered out of service in 1919, he became a salesman in the industrial department of the Peoples Gas Light & Coke Company, Chicago, until October, when he became connected with the Simmons-Boardman Publishing Company as an associate editor. In April, 1920, he was made eastern engineering editor of the *Railway Age* and of the Railway Engineering and Maintenance.

Milburn Moore

Eugene H. Heald, assistant western division contracting manager of the **American Bridge Company,** with headquarters in Chicago, has been promoted to western division contracting manager, to succeed **Francis J. Llewellyn,** deceased.

J. R. Wilks, chief engineer of the **Armco, Culvert & Flume Manufacturers Association,** with headquarters at Middletown, Ohio, has been appointed manager of the **Ingot Railway Products Company,** Chicago, to succeed **T. P. Kahoe,** resigned.

The General Electric Company plans the erection of a warehouse and office-building at Santa Fe avenue and Fifty-second street, San Francisco, Calif., to cost, with land and equipment, approximately $1,000,000. The building will be heated by electricity.

The Kansas City Structural Steel Company, Kansas City, Mo., has arranged for its employees to double their group life insurance protection in the Metropolitan Life Insurance Company. Over 370 workers are insured under the group insurance plan.

The Independent Pneumatic Tool Company, manufacturers of Thor pneumatic tools and electric tools, has opened a branch office at Milwaukee, Wis., in charge of **G. H. Du Sell,** who has represented the company in this territory for a number of years. The new office will be located at 288 East Water street.

The Air Reduction Sales Company, New York, has created a new sales district, with office at 1296 Forest Home avenue, Milwaukee, Wis., following the purchase of the carbide business of the Gas Tank Recharging Company, of Milwaukee, Wis., including the acetylene plants at Milwaukee and Bettendorf, Ia., and a carbide plant at Keokuk, Ia. The new office will be in charge of **J. S. Strate,** district manager. The new district territory comprises parts of Wisconsin, Michigan, Illinois and Iowa.

Negotiations are under way to permit **Edwin B. Meissner,** president of the **St. Louis Car Company,** to obtain control of the company through the purchase of the stock of John L. Beggs, chairman of the board of directors. A plan also is proposed for re-financing the company, under which there will be $1,500,000 of first mortgage bonds, a preferred stock issue of $1,000,000 and 100,000 shares of common stock. Present stockholders will have the privilege of changing their stock for bonds or preferred stock or both, on a basis of a $100 bond or $66.67 of new preferred and three shares of common stock for each share of old preferred. On the other hand, they may accept $195 in cash for each share of old preferred. Common stock holders may accept $350 a share for old common or 55 shares of new common for each share of old common.

Pullman Company's Annual Report

The annual report of the Pullman Company for the fiscal year ended July 31, 1925, shows a gross revenue from the operation of sleeping and parlor cars amounting to $83,927,749, which was the greatest in the history of the company. Of this amount $65,970,956 were spent in conducting the business, $8,575,388 were paid to the roads as their share of Pullman revenue, leaving as the net results of sleeping car operations for the year the sum of $9,381,405 available for necessary reserves other than depreciation and for capital expenditures and dividends. This net income was equivalent to approximately 27 cents for each revenue passenger carried, 7 cents for each revenue passenger carried 100 miles, or 0.07 of a cent per passenger mile, and only $3.06 per day for each car owned by the company. It represented a net return of less than 5 per cent on the fair value of the properties used in conducting the carrier business.

During the year 700 new sleeping cars were added to the equipment, and at the close of the year the company owned 8,510 cars. Government securities and cash in the treasury amounted to $25,237,669. The shrinkage in this item from the amount reported last year is due to the increased investment in equipment, which is reflected in that account. In addition, the company holds bonds, stocks and equipment trust notes which have a market value of $10,561,362, making the total value of cash and securities held $35,799,031. Accumulated depreciation on cars now being retired because of obsolescence is not sufficient to meet the present day cost of new equipment to replace the retired cars and an appropriation of $1,000,000 has been set aside to furnish funds to meet these excessive reproduction costs. A total of $1,000,000 also has been appropriated as an addition to the pension reserve. The sum of $185,087 was distributed in pensions during the year. Under the death benefit plan inaugurated December 1, 1922, $168,554 was paid during the year to widows and dependents of deceased employees.

The Pullman Car & Manufacturing Corporation on July 31, 1925, had in its treasury $16,757,158 of cash and government securities and $1,915,258 of car trust and other negotiable securities. During the year the corporation earned $6,816,966 after all charges. The stock of the corporation has been placed on the 6 per cent

dividend basis and the Pullman Company has received as dividends $3,249,968 covering a period of 13 months and the sum of $3,566,996 was added to the surplus of the manufacturing corporation. The income account and balance sheet for the fiscal year ending July 31, 1925, are as follows:

	Year ending July 31, 1925	Year ending July 31, 1924
Gross revenue from cars	$83,927,749	$81,240,688
Operating expenses, repairs of cars, taxes, insurance, etc.	58,016,270	64,550,896
Depreciation on cars (average of $934.75 per car)	7,954,686	.....
Less: Amount paid to railroads as their share of Pullman revenue	8,575,388	8,991,156
Net income from sleeping car business for the year	9,381,405	7,698,636
From investments, etc. (This amount for 1924 shown with next item)	3,140,603	.....
Dividends from Pullman Car & Manufacturing Corporation	3,249,968	7,504,426
Total net income for the year	$15,771,976	$15,603,062
Reserve for pensions, reserve for excess cost of replacement of cars, dividends declared	12,738,872	12,703,221
Net surplus for the year	$3,033,104	$2,899,841

Trade Publications

ADVANCE MOTOR CAR ENGINE.—In a leaflet of one sheet, known as Bulletin 210, Fairmont Railway Motors, Inc., presents a detailed description and illustrations of the new Fairmont engine known as the Type QB, which is said to embody a distinct improvement over the six-horsepower Fairmont engine previously installed in the motor cars manufactured by that company. The improvements in this engine include larger bearings, a new sliding base, a new timer and other features.

NEW TRACK APPLIANCE CATALOG.—The Kilby Frog & Switch Company, Birmingham, Ala., has just issued catalog No. 10, which lists, describes and illustrates the various track appliances manufactured by that company. Among these are included frogs, switches, crossings, switch stands, rail braces, guard rails, clamps, compromise joints and track bolts. A number of pages in the back of the catalog are devoted to diagrams and tables of the properties of turnouts of various track gages and frog angles.

THE 4-WHEEL TRAILER TRUCK.—Under the title of "The Locomotive 4-Wheel Articulated Back End," the American Arch Company, Inc., New York, has issued an eight-page pamphlet describing the articulated 4-wheel trailer truck of the type used under the Lima 2-8-4 type locomotive, first placed in service on the Boston & Albany, and setting forth the advantages of the large grate area the 4-wheel truck makes possible in improving combustion and boiler efficiency. The truck is sold under patents controlled by the American Arch Company.

ADVANCE SERIES OF MOTOR CARS.—Fairmont Railway Motors, Inc., Fairmont, Minn., has issued Bulletin 205 of four pages for the purpose of outlining the advantages of its A2 and AT2 type motor cars, which are designed for use by section gangs. The A2 is designed for single-speed transmission with either belt or chain drives, the AT2 having a belt drive and a two-speed transmission. The bulletin corresponds in size and style with earlier bulletins describing other types of cars manufactured by this company and presents complete specifications of the equipment, together with a discussion of the relative merits of the belt and chain drives, outlining the purposes to which they are best adapted.

THE SOUTHERN PACIFIC has purchased 107 acres of land between Compton, Cal., and Dominguez Junction, near Los Angeles, to be developed as an industrial tract. The land is located on the Southern Pacific line to Los Angeles Harbor.

THE FREIGHT CLAIM DIVISION of the American Railway Association has issued a guide for the assistance of agents and others in the inspection of cars for defects prior to loading at places where no car man is available. It directs attention to ladder treads or hand holds, brake shafts and attachments, sill steps, end plates, corner or end posts, coupler releases, draft timbers, draft timber bolts, couplers, runnings boards, side plates, handholds, wheels, brake rigging, truck bolsters, center sills, end sills, body bolsters, air brake cylinders, triple valve, air reservoir, and center plates.

Railway Construction

CANADIAN NATIONAL.—The construction of a 30-mile branch line from Warden, Alta., eastward is under way. The contract has been awarded to R. W. Graham, Edmonton, Alberta.

CENTRAL OF NEW JERSEY.—A contract has been awarded to the Jobson-Gifford Company for the construction of a concrete masonry bridge in Elizabeth, N. J., in connection with the company's reconstruction of its bridge over Newark bay.

CHESAPEAKE & OHIO.—Bids are being received for the construction of a direct coaling station at Olive Hill, Ky.

CHICAGO, BURLINGTON & QUINCY.—A contract has been awarded to G. A. Johnson & Son, Chicago, for the construction of a four-stall addition to the roundhouse at Hannibal, Mo., to cost $25,000, as reported in the *Railway Age* of July 25.

CHICAGO, BURLINGTON & QUINCY.—The construction of the following buildings and line improvements at costs indicated has been authorized: storehouse at Aurora, Ill., $420,000; pattern storage building at Burlington, Ia., $60,000; elevator annex at Murray, Mo., $450,000; reconstruction of the bridge over the Elkhorn river at Winslow, Neb., with two 132-ft. through truss spans and two 72-ft. deck plate girder spans on concrete piers, $51,000; replacement of pile trestle bridge over Loup river at Ravenna, Neb., with steel and concrete structure and better grades, $45,000; replacement of eight 80-ft. deck plate girder spans with six 100-ft. deck plate girder spans on concrete piers at Woodcliffe, Neb., $182,000; new steel bridge 240 ft. long on concrete piers at Western avenue, Chicago, $175,000; water treating plants at Buda, Ill., Quincy and Beardstown and Sheridan, Wyo., $80,000; changes in the Fourteenth street passenger yard at Chicago, $60,000; industrial track changes at Peoria, Ill., $93,000; spur track at Tampa, Col., $176,000.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Bids have been received for the construction of an addition to the icehouse at South Hammond, Ind.

KENTUCKY & INDIANA TERMINAL.—Bids have been received for the construction of a shop building, a storehouse and an office building at Louisville, Ky., to cost a total of $75,000.

MADILL COAL & COKE COMPANY.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a line of 11 miles connecting its mine in Indian county, Pa., with the lines of the Pennsylvania, Cambria & Indiana and Buffalo, Rochester & Pittsburgh.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—A contract has been awarded to the Pfeffer Construction Company, Duluth, Minn., for the construction of a freight and passenger station at Cass Lake, Minn.

MISSOURI PACIFIC.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a branch from Kincaid to Mildred, Kan., 2.8 miles.

NEW YORK CENTRAL.—A contract is reported to have been awarded to H. K. Ferguson Company, Toledo, Ohio, for the construction of a 60-ft. by 80-ft. machine shop at Airline Junction, near Toledo, Ohio.

NEW YORK CENTRAL.—The New York State Transit Commission has issued an order calling for the beginning of work on the removal of grade crossings on the line which lies along the west side of the Manhattan Island, New York City; nine crossings in a space of about 1½ miles. This is a three-track freight line from Spuyten Duyvil, southward to the Central's freight terminals at 60th street and south of there. It comes within the territory on which the railroad will be required to install electric traction. The present order of the commission is made pursuant to a comprehensive order issued last year but which was held in abeyance because the state of New York had not appropriated the money necessary to bear the state's share of the cost, one-quarter of the total. This money, about $750,000, has now been

made available by transfer from appropriations which had been made for work at other places but which will not be there required in the immediate future. The crossings which are to be abolished are those at St. Clair place, West 125th street, West 130th street, West 131st street, West 132d street, West 133d street, West 134th street, West 135th street and West 138th street.

NEW YORK, CHICAGO & ST. LOUIS.—The staking of the channel to be followed in dredging the Calumet Harbor, Chicago, is under way and the dredging which will be done by the railroad will be undertaken soon.

NORTHERN PACIFIC.—Plans for the construction of a 50-mile branch line from Orofino, Idaho, into Clearwater Timber district in northern Idaho, are nearly completed. The line will be constructed jointly by the Northern Pacific and the Oregon Washington Railroad & Navigation Company.

OREGON TRUNK.—Plans have been completed for the construction of an extension from Bend, Ore., to Klamath Falls, a distance of 170 miles. If authorization for the construction is secured from the Interstate Commerce Commission it is planned to begin work early next spring.

PENNSYLVANIA.—A contract has been awarded to the T. J. Foley Company, Pittsburgh, Pa., for the reconstruction of an undergrade highway bridge at Weirton, W. Va., made necessary by the widening of the highway; approximate cost, $35,000. Contracts have been awarded to the H. E. Wagner Company, Harrisburg, Pa., and the Milliron Construction Company, Du Bois, Pa., respectively for masonry for undergrade bridges at Duboistown, Pa., and Troy, Pa., each of which involves an expenditure of approximately $25,000.

SOUTHERN PACIFIC.—A contract has been awarded to the Standard Construction Company for the construction of a passenger station at Yuma, Ariz., to cost approximately $60,000.

SOUTHERN PACIFIC.—Location surveys for the extension of the Oregon, California & Eastern from Sprague river, Ore., east to a connection with the Nevada-California-Oregon at Lakeview have been completed. As reported in the *Railway Age* of July 11, this extension in conjunction with the Southern Pacific Natron cut-off will provide a new route from Oregon to the east, approximately 200 miles shorter than any present route.

ST. LOUIS-SAN FRANCISCO.—Passenger facilities and yards at Springfield, Mo., will be improved and enlarged at a cost of approximately $300,000.

TEXAS & PACIFIC.—A contract has been awarded to V. E. Ware, El Paso, Tex., for the construction of the superstructures of a roundhouse, a machine shop, and other terminal facilities at Shreveport, La. As reported in the *Railway Age* of February 28, the Shreveport project will cost $925,000.

WABASH.—Bids were closed on September 1 for the construction of a one-story machine shop, 60 ft. by 120 ft., at Decatur, Ill.

WACO, BEAUMONT, TRINITY & SABINE.—Application will soon be made to the Interstate Commerce Commission for authority to construct an extension approximately 100 miles long from Weldon, Tex., to Waco.

WESTERN PACIFIC.—This company has applied to the Interstate Commerce Commission for authority for an extension of 11.4 miles easterly and southerly from Villinger siding in San Joaquin county, Calif.

THE CITY AUTHORITIES of Miami, Fla., last week put 100 men at work helping to unload vessels and clear freight houses, to enable the carriers to order the suspension of embargoes which have been put on the movement of many classes of freight destined for that city. Of the 100 men, 60 were employees of the city and 40 were prisoners from the city jail. Railroads and steamships have for some weeks experienced an unprecedented congestion of freight and have imposed embargoes in all directions. This condition is due to the doubling of the population of Miami within the last four months, and the starting of a city-wide building program which contemplates the use of $100,000,000 worth of material. Innumerable carloads of household goods are coming in all the time.

Railway Financial News

ATLANTIC CITY.—*Abandonment of Branch.*—The Interstate Commerce Commission has issued a certificate authorizing the Atlantic City to abandon its Sea Isle City Branch from Ocean City Junction, Cape May County, N. J., to Sea Isle City, 8.1 miles. Operation was discontinued on September 13. The community has other rail transportation facilities.

BOSTON & ALBANY.—*New Directors.*—Charles Francis Adams, of Boston, and Chandler Bullock, of Worcester, have been elected directors to fill vacancies caused by the death of Chester W. Bliss and the resignation of Augustus G. Bullock.

CHICAGO & NORTH WESTERN.—*Equipment Trust.*—The Interstate Commerce Commission has approved the issuance of $5,415,000 equipment trust certificates, Series Q, to be sold at 97 and accrued interest. The certificates mature in equal annual installments over a period of 15 years. The equipment includes 3,200 freight train cars and 50 passenger train cars of a total estimated cost of $7,235,729.

CRAIG MOUNTAIN LUMBER COMPANY'S RAILWAY.—*Final Valuation.*—The Interstate Commerce Commission has found the final value for rate making purposes of the property owned and used for common carrier purposes, as of June 30, 1917, to be $126,017.

IRONTON.—*Lease.*—The Interstate Commerce Commission has approved a lease of this company for a term of 25 years by the Reading & Lehigh Valley, which had been previously authorized to acquire control by ownership of stock, each owning 50 per cent. The road extends from Hokendauqua, Pa., to Siegersville, with branches to Coplay and Ironton, 12 miles, and connects with the Reading & Lehigh Valley and Central of New Jersey. It serves several cement mills and was represented to be a valuable feeder. It will be operated by the Reading.

KANSAS CITY, MEXICO & ORIENT.—*Appeal Against Sale.*—An appeal has been taken by English noteholders to the United States Court of Appeals at St. Louis, Mo., protesting against the sale of this road on March 27, 1924, when the Orient was purchased by a group of Kansas City financiers for $3,000,000. This sale and the subsequent reorganization was approved by the federal court at Kansas City. English noteholders at that time protested against the sale. In an attempt to settle differences, Kansas City purchasers offered to the English noteholders an opportunity to take over the Orient at the purchase price of $3,000,000 plus receivers' and attorneys' fees of $500,000, but this offer was declined.

KANSAS CITY SOUTHERN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by purchase of stock of the Kansas City & Grandview, which owns a right of way from Belt Junction to Grandview, Mo., 13 miles.

LOUISIANA SOUTHERN.—*Abandonment.*—The Interstate Commerce Commission has authorized the abandonment of 1.82 miles of line along St. Claude avenue in the city of New Orleans, La.

MADISON COUNTY.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of this line, which extends from a connection with the south at Rinion, N. C., to Belva, 7 miles. The road was built to serve lumber operations, since discontinued because of exhaustion of the timber.

MANCHESTER & ONEIDA.—*Final Valuation.*—The Interstate Commerce Commission has found the final value for rate-making purposes of the property owned and used for common-carrier purposes to be $121,415 as of June 30, 1916.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $8,136,000 of 5 per cent first consolidated mortgage bonds, to retire a like amount of bonds of the Minneapolis, Sault Ste. Marie & Atlantic, due January 1, 1926.

NEW YORK, CHICAGO & ST. LOUIS.—*Unification Hearing.*—The hearing on the Van Sweringen unification plan before Director Mahaffie of the Bureau of Finance of the Interstate Commerce Commission, which was resumed on September 8, was again adjourned on September 22 until September 28, when O. P. Van Sweringen is to be recalled for further cross-examination by counsel for the protesting minority stockholders of the Chesapeake & Ohio, particularly on a large amount of data which he has furnished since his direct testimony. The two weeks since the hearing was resumed have been taken up by cross-examination of three statistical witnesses introduced on behalf of the applicant, H. C. Royal, of Ernst & Ernst, G. W. Burpee, of Coverdale & Colpitts, and R. S. Marshall, assistant to the president of the Chesapeake & Ohio. Mr. Royal was excused on account of illness after he had been on the stand for about a week but was to be recalled after Mr. Van Sweringen's further cross-examination. Much of the cross-examination dealt with alleged discrepancies in the figures presented by the different statistical witnesses and with questions regarding the various adjustments they had made in compiling the exhibits. Especial attention was devoted to the provisions of the plan by which the stockholders of the present New York, Chicago & St. Louis do not receive new company shares but the company will receive shares of the new company equal to the number of its outstanding shares, in addition to the shares to be received by it for its stock of the Chesapeake & Ohio and Pere Marquette.

NEVADA COUNTY NARROW GAUGE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line between Colfax, Calif., and Nevada City, 20.65 miles. This is its entire mileage.

OLD COLONY.—*Bonds.*—This company, which is leased to the New York, New Haven & Hartford, has been authorized by the Interstate Commerce Commission to issue $5,598,000 5 per cent first mortgage bonds, Series B, to be sold to R. L. Day & Co. at 98 and accrued interest.

READING COMPANY.—*Extension for Exercise of Rights.*—The United States District Court at Philadelphia has on the application of the Reading granted an extension of six months for the exercise of the rights of the Reading Company and the certificates of interest for Reading Coal & Iron Company shares. It was stated that to date only about 45 per cent of the rights issued by the Reading Company to its stockholders had been exercised. The rights maining outstanding are reported as including those owned by the Baltimore & Ohio and 100,000 by the Widener interests.

Lease.—See Ironton, item above.

SOUTHERN PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by stock ownership of the Holton Inter-Urban, which has a line from El Centro to Holtville, Cal., 10.47 miles.

SUNSET.—*Tentative Valuation.*—The Interstate Commerce Commission has served a tentative valuation report as of June 30, 1916, in which the final value for rate-making purposes of the common-carrier property owned is placed at $1,081,335.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—*Lease.*—This company has been authorized by the Interstate Commerce Commission to acquire control by lease of the St. Louis Merchants' Bridge Terminal, the East St. Louis Connecting and the St. Louis Transfer.

Dividends Declared

Boston, Revere Beach & Lynn.—1½ per cent quarterly, payable October 1 to holders of record September 16.

Kansas City Southern.—Preferred, 1 per cent, quarterly, payable October 15 to holders of record September 30.

Minneapolis, St. Paul & Sault Ste. Marie (Leased lines).—2 per cent, payable October 1 to holders of record September 19.

Northern Pacific.—1¼ per cent, quarterly, payable November 2 to holders of record September 30.

Trend of Railway Stock and Bond Prices

	Sept. 22	Last Week	Last Year
Average price of 20 representative railway stocks	88.00	87.25	71.00
Average price of 20 representative railway bonds	91.68	91.60	88.46

Railway Officers

Executive

R. E. Kelly, who has been connected with the bureau of news of the Southern Pacific, has been appointed manager of development, executive department, with headquarters at San Francisco, Cal., a newly created position.

Operating

O. C. Sandberg has been appointed superintendent of the Peru division of the Wabash, with headquarters at Peru, Ind., succeeding W. H. Eckard, deceased.

J. A. Edwards, district passenger agent of the Southern, with headquarters at Detroit, Mich., has been promoted to northern passenger agent, with headquarters at Chicago, succeeding C. C. Stewart, who has been transferred.

Martin W. Clement, general manager in charge of the Central region of the Pennsylvania, with headquarters at Pittsburgh, Pa., has been promoted to assistant vice-president in charge of operation, a newly created position, with headquarters at the company's general offices in Philadelphia. Mr. Clement will take up his new duties on October 1.

The headquarters of the operating department of the Seaboard Air Line, will, on October 1, be transferred from Norfolk, Va., to Savannah, Ga. The following officers will be affected by the change: vice-president in charge of operations; chief of motive power and equipment; chief engineer; engineer maintenance of way; superintendent transportation; superintendent telegraph; chief special agent.

K. W. Rodwell has been appointed assistant superintendent of transportation of the Seaboard Air Line, with headquarters at Norfolk, Va. **W. E. Rodwell** has been appointed assistant to the superintendent of transportation, with headquarters at Norfolk, Va., succeeding K. W. Rodwell. **F. H. Harris** has been appointed car accountant, with headquarters at Portsmouth, Va., succeeding W. E. Rodwell.

The Missouri Pacific has consolidated the offices of the superintendent of claim prevention and the superintendent of station service. **T. F. Scruby,** superintendent of claim prevention, has been appointed superintendent of stations and claim prevention, with headquarters at St. Louis, Mo. **F. A. Clifford,** superintendent of station service, has been appointed assistant superintendent of stations and claim prevention, with the same headquarters. **F. W. Foltz** has been appointed inspector of transportation, with headquarters at St. Louis, Mo., succeeding T. A. Stainthorp, assigned to other duties. **E. E. Harn** has been appointed assistant trainmaster of the East, West and Herrin districts of the Illinois division, with headquarters at Bush, Ill.

H. A. Benton, who has been appointed superintendent of the Georgia division of the Seaboard Air Line, with headquarters at Atlanta, Ga., was born on November 11, 1883, at Monroe, N. C., and was educated in the public schools there. He entered railway service on January 1, 1900, in the agency and train service of the Seaboard Air Line, where he remained until July 16, 1903, when he went with the Mexican Central as freight conductor and yardmaster in Mexico. From July 9, 1906, to November 15, 1906, he was yard conductor on the Seaboard Air Line, at Abbeville, S. C., and from November 15, 1906, to December 1, 1914, he was general yardmaster for the same company at Abbeville, S. C., and Atlanta, Ga. In December, 1914, he became trainmaster on the Virginia and Georgia divisions at Raleigh, N. C., and Abbeville, S. C., which position he held at the time of his recent appointment.

J. D. Walker, who has been promoted to superintendent of the Southern division of the Colorado & Southern, with headquarters at Trinidad, Colo., was born on January 26, 1885, at

Leadville, Colo. He entered railway service in April, 1902, as a clerk in the operating department of the Colorado & Southern and during the subsequent ten years he held various clerical positions including chief clerk in the car accounting department at Denver, Colo. Mr. Walker was promoted to traveling car agent in October, 1912, and he held that position until July, 1915, when he was promoted to chief clerk to the superintendent of transportation. In October, 1917, he was promoted to acting superintendent of transportation, in which position he continued until August 31, 1919, when he was promoted to superintendent of transportation, with headquarters at Denver. Mr. Walker remained in that position until his recent promotion to superintendent of the Southern division.

G. R. Carlton, who has been appointed general superintendent of the Seaboard Air Line, with headquarters at Savannah, Ga., was born on February 18, 1868, in Rutherford County, N. C., and attended school at West Springs and Spartanburg, S. C., until 1883. He entered railway service with the Columbia & Greenville (now Southern) as a messenger in the freight agent's office at Spartanburg, S. C. He was ticket agent and operator at Union, S. C., in 1884, and agent at Alston, S. C., in 1885. In 1887, he went with the East Tennessee, Virginia & Georgia (Southern) as operator, and from 1889 to 1898 was dispatcher and then chief dispatcher. From 1898 to 1901, he was with the Savannah, Florida & Western (Atlantic Coast Line) at Atlanta and Macon as chief dispatcher, and in 1901, he went to the Seaboard Air Line as chief dispatcher, which position he held until 1906, when he became trainmaster. In 1911, he was promoted to superintendent, with headquarters at Atlanta, which position he held at the time of his recent promotion to general superintendent.

Traffic

George E. Keyes has been appointed industrial development agent of the New York, New Haven & Hartford, with headquarters at New Haven, Conn.

G. F. Wheeler has been appointed freight claim agent of the Michigan Central, with headquarters at Detroit, Mich., succeeding **A. K. Masters,** resigned.

E. J. Hanson has been appointed general agent, refrigerator service, of the Union Pacific, with headquarters at Omaha, Neb., succeeding I. N. Randall, resigned.

Grover C. Aldrich, heretofore, traveling freight agent at Troy, N. Y., has been appointed freight and passenger agent of the Boston & Maine at Buffalo, N. Y. This is a new office.

R. B. Robertson, assistant freight traffic manager of the Union Pacific, with headquarters at Chicago, has been promoted to assistant traffic manager, with headquarters at Los Angeles, Cal., succeeding Marius DeBrabant, retired.

J. P. Quigley has been appointed assistant general freight agent of the Union Pacific, with headquarters at Los Angeles, Ca. **A. J. Seitz** has been appointed assistant general freight department, with headquarters at Salt Lake City, Utah, succeeding E. J. Hanson, promoted.

R. G. Buckmaster has been appointed general agent of the Texas & Pacific, with headquarters at Kansas City, Mo., succeeding G. C. Whitney, resigned. **S. I. Miller** has been appointed assistant general agent, with headquarters at Chicago, succeeding L. A. Tibor, resigned.

Frank A. Young, who has since 1922 been general passenger agent of the European traffic department of the Canadian National, with headquarters at London, England, has been promoted to general eastern passenger agent, with headquarters at New York—a newly created position.

F. L. Feakins, general agent of the Union Pacific, with headquarters at Philadelphia, Pa., has been promoted to assistant freight traffic manager, with headquarters at Chicago, succeeding **R. B. Robertson,** promoted to assistant traffic manager at Los Angeles, Cal. **Gentry Waldo,** assistant to the vice-president in charge of traffic, with headquarters at Omaha, has been promoted to assistant freight traffic manager, with the same headquarters. **H. L. Lauby** has been appointed general agent at Philadelphia, succeeding Mr. Feakins.

R. E. Smith, who has been appointed assistant to the freight traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., entered the service of the Northern Pacific in July, 1902, as a clerk in the office of the general freight agent. After holding several other clerical positions in the freight department, he was promoted to contracting freight agent at Minneapolis in May, 1911, and held that position until February, 1912, when he was promoted to traveling freight agent, with headquarters at St. Paul. In April, 1924, Mr. Smith was promoted to chief clerk in the general freight department. He remained in that position until his recent promotion to assistant to the traffic manager.

Engineering, Maintenance of Way and Signaling

J. M. Weir, formerly chief engineer of the Kansas City Southern, has been appointed chief engineer for the W. H. Harriman Company of New York. He will have charge of the railroad facilities in Southern Russia where this company has a concession for mining manganite ore.

Purchasing and Stores

O. A. Donegan has been appointed general storekeeper of the Boston & Maine, with headquarters at Boston, Mass., succeeding J. E. Byron, who has been assigned to other duties. Mr. Donegan's appointment is effective on October 1.

Obituary

Robert L. Franklin, freight claim agent of the Pennsylvania, at Philadelphia, Pa., died on September 22, at the Germantown Hospital, Philadelphia, Pa., after a brief illness.

W. H. Eckard, superintendent of the Peru division of the Wabash, with headquarters at Peru, Ind., died at Danville, Ill., on September 17. He had been in ill health for some time, suffering from diabetes.

Henry W. Canniff, formerly president of the New York, Chicago & St. Louis, died at his home in Cleveland, O., on September 18. Mr. Canniff was born at Litchfield, Mich., on October 22, 1847, and was educated in the public schools. He entered railway service in 1863, and until 1865 was night watchman on the Michigan Southern & Northern Indiana (New York Central) at Osseo, Mich., and from February, 1865, to August, 1868, he was agent for the same road at Trenton, Mich. In August, 1868, he became joint agent for the Michigan Southern & Northern Indiana and the Louisville, New Albany & Chicago at Salem Crossing, and this position he held until August, 1872, when he became trackmaster of the Kendallville division of the Lake Shore & Michigan Southern (New York Central). From December, 1879, to November, 1880, he was trackmaster of the Chicago division, and in 1880, became superintendent of the Lansing division, including the Detroit, Hillsdale & Southwestern and the Ft. Wayne & Jackson. In 1889, he became assistant general superintendent, and in 1892, general superintendent. From March, 1896, to May, 1898, he was general manager of the Lake Shore. In May, 1898, he became president of the New York, Chicago & St. Louis, which position he held until 1916, when he resigned.

THE PRESOV-MICHALOVCE line will be built by the Czechoslovak State Railways at an approximate cost of 130,000,000 crowns ($384,800). The line will be 63 kilometers long.

A RAILWAY LINE will be built from Pernau to Lelle (Esthonia), under a project recently confirmed by the government and elaborated by the Minister of Communications. The new line will be 60 kilometers long.

THE POLISH DIET has approved the construction of a railway from Bromberg to Gdynia, a distance of 190 kilometers, which will cost 60,000,000 zlotys ($1,088,400). Construction was scheduled to commence in August and is expected to be completed in three years. Most of the material will be secured locally.